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THE

# NATURE and QUALITIES
OF
# BRISTOL WATER:

ILLUSTRATED BY

*Experiments* and *Obſervations,*

WITH

PRACTICAL REFLECTIONS

ON

BATH WATERS,

*Occaſionally interſperſed.*

BY THE LATE

*A. SUTHERLAND,* M. D. of BATH.

A NEW EDITION.

*Fronte ſub adverſá ſcopulis pendentibus, Antrum:*
*Intus Aqua dulces.* VIRG. Æneid.

*BRISTOL:*

Printed by J. RUDHALL & Co. and ſold at the Pump-Room,
Briſtol Hot-Wells, and by all the Bookſellers of *Bath* and
*Briſtol,* 1788.

TO THE

*Moſt learned and moſt exemplary,*

THE

DOCTORS and PROFESSORS

OF

MEDICINE,

IN THE

UNIVERSITY of *Edinburgh*;

As a Teſtimony of perſonal eſteem,
as well as Academical gratitude,
this imperfect ESSAY, is humbly
offered,

*By the* AUTHOR.

# ADVERTISEMENT.

EVERY Treatiſe which has hitherto been publiſhed on the *Briſtol Hot-Well-Water*, being out of Print, it was thought a Republication of the following Sheets on its Nature and Qualities would not be unacceptable to the Nobility and Gentry, who are recommended to the Uſe of it.

24th *May*, 1788.

History of Bristol Water p. 13.
Writers of Bristol Water -- 18.
Analysis of Bristol Water - 39.
Cause of Heat in mineral Waters - 65.
Contents of Bristol Water with their virtues ------ 71.
The virtues of Bristol water in the cure of diseases in general 99.
The virtues of Bristol water in particular diseases --120.

THE

# INTRODUCTION.

VARIOUS have been the Opinions of Writers, on the ſubject of MINERAL WATERS in general, as well as upon thoſe of *Briſtol* in particular. Some, without making one Experiment, have given them Ingredients which they never knew: whilſt others, by various Tortures, have deſtroyed thoſe Principles which Nature gave. Each hath aſſigned the vain illuſions of his fancy for diſcoveries, and each practiſed according to his prejudice.

To preſerve a neutrality, in this caſe, Dr. SHAW propoſes a rational method of coming at the truth, which is not to be learned from the profeſſed Patrons of Mineral Waters, nor from their Antagoniſts, but from ſuch diſcreet, and intelligent perſons, as endeavour to illuſtrate the ſubject by direct Experiments, and Obſervations.

THUS.-------DR. LESTER, in his Treatiſe entitled, *Exercitationes due, de Fontibus Anglie medicatis*, has exploded many fictitious Principles, and examined into the effects of medicated Waters, upon drinking.

Mr. BOYLE, in his Memoirs for the *Natural Hiſtory of Mineral Waters*, hath examined their ſpecific Gravities, expoſed their Ingredients, and, after enquiring into their Effects, concludes, That Experience muſt determine beſt, for, or againſt, them.

Dr. FREDERICK HOFFMAN, may juſtly be eſteemed the Prince of Enquirers. After a ſeries of years ſpent in the examinations of WATERS, as a *Naturaliſt*, *Chymiſt* and *Phyſician*, he declares them to be the moſt *innocent*, the moſt *univerſal*, and the moſt *ſerviceable* of all Medicines.

AFTER a long experience, he ventures to pronounce, that the grand

Secret in Medicine, is to be Maſter of a few ſelect remedies; to underſtand their virtues, to know what they can, and what they cannot do.-------Thus *Damaſunus* gave this advice to his Son, “ Let the Re-“ medies, you employ, be few, “ and certain; for the uſe of a “ multiplicity, ſo diſtracts the “ Senſes, that a Phyſician can ſafe-“ ly depend on none.”

FEW underſtand the powers of the Medicines, which they preſcribe; infinite Volumes are ſtuffed with the *Materia Medica*, infinitely combined, whoſe Authors launch out into the high Encomiums of the Virtues of Medicines, which upon trial are found to have none.

MOST Phyſicians, antient, as well as modern, are ignorant of the Principles of Chymical Philoſophy: they preſcribe Medicines without a previous knowledge of their virtues: deſtitute of a ſure foundation, they crowd Compoſitions on Compoſitions, in ſuch a manner, that if the Patient has the good luck to recover, the Phyſician is ſo much at a loſs to know to which of the Remedies the cure was due, that, upon a like occaſion, he knows not how to employ the ſame.-----Hence it was, That Lord BACON, very juſtly, called multiplicity of remedies, the *Child of Ignorance;* and, with great diſcernment, inflicted a cenſure on the Practitioners of his days.

THE Principles of Mineral Waters, are only diſcoverable by Chymiſtry; every different Water hath its different virtues; as if Providence had, with a liberal hand, dealed out ready, and eaſy, cures, for all the diſtempers with which mortals are afflicted.-----Some Waters check the too great excretions; others, again, promote excretions, of all ſorts, and ſome particular ones.----Mineral Waters, beſides, have this peculiarity, viz. when common ſprings are dried up, they have continued to flow the ſame, as to quantity, ſtrength, and temperture; and that at all ſeaſons of the year. This obſervation holds true as to Bath Waters, as well as to theſe. A happy circumſtance to the patient, whoſe diſeaſe will not wait for the return of ſeaſons!

SETTING out then with the judicious HOFFMAN for my Guide, I am reſolved to take nothing upon truſt, nor meaſure the ſkill of Phyſicians by popular opinion. As far as my abilities will carry me, I propoſe to examine every thing by the rule of reaſon; to point out a rational adminiſtration of theſe Waters; and thereby, reſcue them from that diſcredit which is oftner due to the ignorance of the adminiſtrator, rather than to any real want of virtues in the Waters themſelves. Our ſenſes are too groſs to comprehend the intricate ſcheme of nature; all we know muſt be founded on experiments: we may be allowed to reaſon, ſo long as we pretend not to certainty, or to paſs our opinion for demonſtration.----When I reflect on thoſe diſeaſes, which have been deemed incurable, by men of eminence, in their profeſſion; when, both here, and at Bath, I have ſeen thoſe very Maladies yield to the power of the Waters; and that inſtantaneouſly; I have often been led to admire the Goodneſs of Providence, in ſupplying mankind with Remedies, which no art can imitate, or Analyſis fully inveſtigate.---"*Manifold are thy Works, O* LORD! *in Wiſdom haſt Thou made them all.*"

# THE NATURE and QUALITIES OF BRISTOL WATER, &c.

## CHAP. I.

## *The* HISTORY *of* BRISTOL WATER.

IN ſubduing the moſt ſtubborn *Hectical-Heats*, and, in reſtraining the moſt *colliquative* Diſcharges, ſo very ſurpriſiing have been the Effects of Briſtol Waters; ſo many deplorable Objects, have theſe ſalutiferous ſprings reſtored to priſtine vigour, when the lamp of life ſeemed almoſt extinguiſhed; when the utmoſt efforts of Art, and Power of Medicine, had been tried in vain; That, now, univerſally, they challenge the regard of all thoſe who are concerned for the welfare of Society, or the Honour of the healing Art.

THE *Hotwell Water-Spring* riſes perpendicularly out of the Rock in the ſloping muddy bank of the River AVON; about a Mile below the City of BRISTOL, between high and low-water mark, where the River makes its entrance between thoſe ſtupendous Cliffs of Rocks, which ſeem to have been torn aſſunder by the violence of an Earthquake, or the general Deluge; at the foot of a Cliff, where once ſtood a Chapel dedicated to St. VINCENT, from which, the Rock and Well, take their Name.

THE Water was, originally, incloſed in a brick ciſtern. Out of this Ciſtern came a wooden pipe, which emptied itſelf into a little pond beneath. In this Pond, People waſhed their ſores. Whenever the Tide roſe as high as the Spring, it mixed with it *and fouled it,* for ſome Hours after.

It has been computed to diſcharge about forty Gallons in a Minute.

The City of Bristol in 1691, raiſed a Wall of ſtone round the *Well*, higher than the Tide ever roſe; but the Weight of ſuch a column of water had well nigh altered the courſe of the Spring. In 1695, the Merchants' Company granted a building Leaſe to certain Proprietors, who recovered the Spring, and made a foundation for Pumps, which now raiſe the Water up thirty Feet high in the centre of a Houſe called the Pump-room; whoſe thick Wall keeps off the Tide from the Spring. Yet, in ſpite of all the Art hitherto contrived, it is found, that the high Tides as well as exceſſive Rains, do mix with the Spring, and foul it, for ſome Hours after the Tide ſunk: At which time the Water in the *Well* is not ſufficient to counter-balance the weight of the external tide; and this continues till the River Water is all pumped out, and the Well-Water recover its priſtine colour and temperament. How this happens, we cannot gueſs, unleſs it be, that it penetrates, particularly in dry weather, through ſome Cliffs of the Rock. The Pumpers however know when to leave off and when to begin.

THE Soil near the Well is, for the moſt Part fruitful, with a conſtant Verdure all the Year. The Tops of the Hills called *Downs*, are flat, and covered with a thin dry Turf, upon Lime Stone, producing great Variety of Plants, ſuch as *Heath*, *Eyebright*, *wild Thyme*, *Majoram*, *maiden Hair*, *wild Sage*, *Geraniums*, *&c.* which breathe forth a pleaſant odour, and affords paſture for Cows, Horſes, Sheep, and Aſſes. On theſe Downs, the company exerciſe themſelves daily in riding; from whence they command, the beautiful proſpect of the ſhips lying at anchor in Kingroad, of the Briſtol channel, and South-Wales, enjoying at the ſame time the benefit of the ſea air, which affords a conſtant breeze even in the hotteſt weather, and ſtrengthens and refreſhes the lungs.

PROVISIONS of all ſorts, are to be had in plenty, during the Summer, which is the ſeaſon allotted, by cuſtom, for drinking theſe Waters. Garden Stuff is early, and excellent. There are LODGINGS near the Wells, convenient enough for ſuch as are real Invalids: there are magnificent Lodgings in the beautiful village of CLIFTON, on the top of the hill, for ſuch as have carriages, and whoſe lungs can bear a keener air.

THERE are *Balls* twice a week, and *Card-playing* every night.

THE *River*, is (it is true) muddy, and unſeemly at low-water; nor do Fiſhes, of any value, care to inhabit ſo filthy a ſtream. But this is amply made up, by the conſtant viciſſitudes of the tides which purify the air. When the River is quite full, the tide is ſuppoſed to riſe near forty feet, the common tides thirty: and when the ſhips are carried up and down, by the tide, paſſing and repaſſing through the meadows and trees, the proſpect is indeed enchanting; eſpecially when the beholder is ſo ſituated as to ſee the rigging of the ſhips and not the water.

THERE are *Turnpike-Roads* all around, and variety of agreeable rides and fine proſpects. Some conveniencies are ſtill wanting, the Road down to the fountain of health, is far from being commodious; there is a ſhaded parade or walk, at the *Wells* for the Company; though not large enough. The common road is either very dirty or very duſty. It is the duty of the Proprietors to remedy thoſe inconveniencies: eſpecially as their Dividends are large from the vaſt exportation of Water, as well as from the Tenants who rent the Pump and the Well-Houſe.

## CHAP. II.

### *Of the* WRITERS *on* BRISTOL WATERS.

IN 1632 Dr. JORDEN, of *Bath*, publiſhed a Diſcourſe on Mineral Waters. He juſt ſays enough of theſe, to convince his readers, that he neither wrote from experience, nor experiments: for he ranks Briſtol Water among the Chalybeates.

Mr. JOHNSON, in his *Mercurius Britannicus*, publiſhed in the year 1634, ſays, "He was upon the ſpot, where, from the "clefts of the rocks, he ſaw a ſtream iſ"ſue forth, the water of which was pleaſant

" ſant to the taſte; and was then of ſome
" repute, being much commended, for
" ulcerous and calculous Concretions of
" the Kidnies; taken inwardly; and for
" old Sores outwardly."

Dr. VENNER, in the third edition of his *Via recta ad Vitam longam*, publiſhed in 1650, has an expreſs Treatiſe on theſe Waters; in which he tells us, that they receive their virtues from *Sulphur* and *Nitre*; from one of his patients voiding a black ſtool, he alſo ſuppoſes Iron; and ſays that theſe Waters were chiefly frequented on account of the Stone; that it notably cools all inflammations of the in-ward parts, and yet does not offend the ſtomach; and is, withal, of a gentle mundifying quality in diſtempers of the Kidneys. In a word, he commends it in all thoſe diſeaſes for which it is celebrated even at this day, excepting the *Diabates*.

Dr. MAPLET practiſed on the ſpot. In ſeveral letters to his patients, he confirms their virtues in the Stone and Gravel, and in cooling and tempering the blood; and thereby ſoftening the urine. He commends it alſo in external cancerous ulcers.

FULLER, in his *Worthies* printed 1662, ſays, "St. *Vincent*'s well is ſovereign for "ſores and ſickneſſes, outwardly or in- "wardly; that it hath a *ruſty ferrugineous* "*taſte*, which it retaineth, though boil- "ed never ſo much." He commends Beer made of it, for the Spleen; and writes rather like a Collector, than an Examiner.

IN 1690, Dr. GUIDOT publiſhed his book *De Thermis Britannicis*, which contains a particular treatiſe on theſe Waters. He has collected all that *Venner* and *Maplet*, have ſaid; he commends it in the *Cholic*, *Diarhea*, and particularly, in the *Diabetes*. He makes the virtues of the *Bath* and *Briſtol* Waters ſynonimous; a plain proof that he was ignorant of both; he wants method, perſpicuity, and ſagacity: he is tedious without inſtructing, and argues from chimerical principles. No wonder therefore that he draws concluſions trifling and abſurd. He gives them *iron*, *lime*, and a *nitro-ſulphurious ſalt*.

IN 1703, Mr. JOHN UNDERHILL, a Practitioner of *Phyſic* at *Briſtol*, publiſhed his *Thermologia*. He ſays, "It is excellent in "all Cacochymy, Cholic, bilious Vomitings, Cardialgia, Dyſenteries, and Fluxes "of all kinds; Fevers, Hectics, Sweatings, "Rheumatic Pains, Herpes, Puſtles, Itch, "Scurvy, Inflammations, Ulcers, inward "or outward, Aſthma, King's-Evil, Dyſury, Diabetes, and Gravel. He greatly "commends its virtues in *hectic*, and *colliquative* Sweats." He gives a collection of caſes, which were formerly collected and preſerved at the well-houſe.—Hiſtories of diſeaſes, and their cures, fairly, and ſenſibly related, conduce, above all things, to the improvement of the Healing-Art; and even rude attempts of this kind, ought to be encouraged. To tables of this ſort hung up in the temple of *Æſculapius* at *Coos*, it is thought HIPPOCRATES owed that diſcernment, and aſtoniſhing ſkill in Prognoſticks, which ſucceeding Phyſicians have admired; but (with all their Improvements) cannot comprehend. Little, it is true, is to be expected from cures related in *Underhill's* manner. Patients labouring under the ſame diſorders may indeed be thereby encouraged to make the like trials; but the Public is only to be improved from caſes fairly, diſtinctly, and accurately related, in the books of Hoſpitals, erected by public authority, and endowed by the noble beneficence of the *Great* and *Opulent*; one of the principal deſigns of ſuch endowments is, to inſtruct Phyſicians, who want the opportunities of practiſing, or making experiments on the ſpot. The Subſcribers have a right to expect journals of every extraordinary caſe. And, where the Charity is ſupported by general Donations, Phyſicians, without diſtinction, ought to be admitted.—At *Bath*, we have an Infirmary well endowed, and frugally conducted. Phyſicians have long attended that ſchool of Phyſic; when their leiſure permits, we hope to be favoured with their remarks.—But to proceed:—

Dr. WYNTER, publiſhed his *Cylus Metaſyncriticus*, in the year 1725, in which he runs a parallel between the *Bath* and *Briſtol* Waters; gueſſing at their contents from their effects, which are deterſive and healing, he ventures to ſay, that they partake of *Chalk*, *Layus Calcurius*, *Calaminaris*, &c. He pronounces them Specifics in internal *Hemorhages* and *Inflammations*, *purulent Ulcers*, *Conſumptions*, *Dropſy*, *Scurvy*, *Stone*, *Gravel*, *Strangury*, and *habitual Gout*, *Rheumatiſm*, *Diabetes*, *ſlow Fevers*, and *Atrophy*, *Pox*, *Cancers*, *Gleets* in both ſexes, and *King's-Evil*. He judges tolerably well, conſidering he ſpeaks without experience.

The Authority of Dr. Mead and Dr. Lane brought them into that Reputation which they ſince have enjoyed.

Dr. Keir publiſhed his *Enquiry*, in the year 1739: he has affirmed, that the fixed Salt, obtained from the Reſiduum, is for the greateſt part, *Nitrous*; his principal argument is drawn from the form into which the Chryſtals ſhoot, when viewed in a Microſcope; but this teſt is often fallacious: He has given us no proof of its emitting a white flame as *Nitre* does, or fulgurating, while in fuſion, by the addition of charcoal powdered. He next ſuppoſes a part of the *Lime-Stone* reduced into a powder, by the ſubtile *Acid* of the Water; but this is no more than the *calcarious* Earth; which will be ſhewn in the Courſe of Experiments. His book otherwiſe beſpeaks the rational Phyſician.

Mr. SHEBEARÉ, *Chymiſt*, publiſhed his *Analyſis* in the year 1740. He ſuppoſes the Water to contain *Alum* and *Lime* in the act of ſlaking. But his principles are deduced from analagous Experiments made with ſolutions of *Alum*, mixed in Lime Water, of the ſame heat with Briſtol Water; he has diſcovered *no Alum* from the Waters themſelves, and his unſlaked Lime is nothing more than the calcarious earthy part of the Reſiduum, calcined into Lime. To uſe his own words, " *He deſpairs of experimental proofs, and would be glad of being allowed probability.*" Had he read Drs. *Alſtons* and *Whytt's* Treatiſes on Lime-Water, he would have been convinced of the abſurdity of his doctrine, for *Lime*, once ſaturated, is of no farther uſe; ſo that, upon his plan, Briſtol-Water would have wanted a perpetual recruit of freſh Lime. He conceived, *a priori*, that *Alum* and *Lime* bid fair for curing a *Diabetes*; and therefore he gives them contents which nature has denied.

Dr. RANDOLPH, in the year 1756, publiſhed his Book, entituled, AN ENQUIRY *into the* MEDICINAL VIRTUES *of* BRISTOL-WATER, *&c. &c.*

IN his Preface (p. 2.) he affirms, " *That chymical Analyſis, is, by no means, the proper method of proceeding in this caſe, &c.*" He ſlightly touches upon a few trite Experiments, and proceeds in theſe words (p. 148.) " *And thus being left under great uncertainties as to theſe matters, it may be expected that I ſhould carefully examine into theſe Experiments, and upon an accurate and exact ſurvey of every particular, endeavour (as much as in me lies) to ſet things right: but as I deſpair of diſcovering any more than thoſe which have gone before me, and think that very little is to be learned from this way of Analyſis, I muſt beg to be excuſed, giving my reaſons why I think all this great labour, and pains, little better than a needleſs piece of curioſity,* Cur tam ridiculum, tam care, prodigus emam?"——Again, (p. 152.) " *To what purpoſe is it to ſeek,* *where nothing is to be found, and buſy ourſelves* (as Gulliver ſays) *in extracting Sun-beams out of Cucumbers?*"

He modeſtly declines a courſe of *poſitive* Experiments; and proceeds (p. 153.) to prove *negatively*, what the Waters are not. And here he, finding himſelf unequal to the taſk, borrows from other Authors two, or three Experiments, and ſo goes on to convince us, of what no man, in his ſenſes, can doubt of, for half an hour, viz. That *Briſtol-Water*, and *Lime-Water*, are two different Things.

Speaking of Medical Histories, he ſays, (p. 24.) "*Thus we ſee, what a medley of concluſions may ariſe, when people are left to tell their own caſes, and thoſe relations are built upon matters of fact.*" The tables which were hung up in the Temple of Æsculapius contained Caſes which were, I dare ſay, no better worded than thoſe which Mr. *Underhill* mentions, and whom he condemns, on a *hearſay*. He tells us, "*The*

*Waters, like other Medicines, may, ſometimes have ſurpriſing effects, whilſt they, for what we know, may not at all be concerned in the effects.*" Now, if *they*, i. e. The contents of the Waters do not contribute to the effects; nor the inſtances of Cures founded on matters of facts, and actually perform'd; how are we to learn what indications they can anſwer? Suppoſe I was to ſee a Patient actually throw up a pint of blood from his lungs, or leſs or more at different times; or, ſuppoſe I never ſaw this, but received the account from men of probity; and afterwards ſaw the ſame perſon actually cured, if I was aſſured that this Cure was performed by drinking the *Hotwell-Water*, what is it to me, how the Patient tells his tale? would I not naturally infer that Briſtol-Water was good in a *Hæmoptoe?*——In contradiction to all that he advances, he ſays, *Preface*, (p. 3.) "*The ſureſt way of knowing them, is by a long, and ſufficient Experience of their good and bad effects.*"

IN the ſame page, he tells us, " *The difficulty of determining the effects of mineral to Waters* a priori *is little elſe than inſuperable to human Underſtanding*." And yet, in a breath, he promiſes a *Medical* Hiſtory ; a *Catalogue* of thoſe *Diſeaſes*, which they are ſuppoſed to *hit* ; and laſtly, he propoſes to examine their *Properties*, ſo far as they are *diſcoverable* by *Experiments*. What is all this, but *determining* a priori, a taſk *inſuperable* to *human underſtanding ?*

PAGE 31. Our *Enquirer* proceeds to call them in one place *cooling* and *drying*, in another *moiſtening* and *cooling* ; *quenching thirſt* ; *creating appetite* ; *giving Fleſh* ; *and increaſing ſtrength* : In the ſame page, he ſays, *as to the ſenſible effects of it, on healthy bodies, they are hardly obſervable*. In the very ſame ſentence, and without the interruption of a point, he proceeds thus,—" *it generally creates appetite, provokes a limpid urine, is apt to get up into the head, as alſo to bind the body ; and, if taken in too great a quantity* *chills the ſtomach and bowels, and ſometimes ſwells the legs.*" The only chapter, worthy the notice of a phyſician, is *that* on the *Diſorders* of the *Urinary Paſſages*; for which he is obliged to Dr. *Fred. Hoffman*. The remainder of this part can be equalled by no performance that I know of, excepting an Eſſay on the *Bath Waters* wrote by himſelf; an original in its kind, which he divides into three chapters. The firſt of which he omits, as being, *in his own words*, more *properly* the buſineſs of an *Hiſtorian*. The ſecond (which contains the Diſeaſes which are to be relieved by the Waters) he runs over, without mentioning his ſubject once; except in the title; and the third, which was to contain the virtues of *Bath Waters*, he purpoſely omits as the ſubject of a future enquiry: which, will hardly be expected by any perſon, who caſts his eye on Dr. *Lucas*'s ſhort Commentary on this pamphlet, in his analyſis of *Bath Waters*, to which I beg leave to refer the reader.

WHO can forbear to laugh at his ſtrange notions of the *Ingeſta* and *Egeſta*, p. 33?—Of the *ſuperfluous Humidity of the Blood.*—Of *Heats* being the moſt obvious, and common, *cauſe* of fevers; declaring in the ſame breath, that fevers are not the conſequence of *heat.*—Of bodies being ſubject to *two* fevers at *once*, p. 37.—Of the *cure* of the *cauſe* of diſeaſes, p. 45, where he talks of *ſtimulating* fluids, and *heating* of ſolids.

THE third and laſt part treats of the *nature* of *Briſtol Water*, p. 158, he has theſe words, "*But now I ſhall proceed to conſider the water in another light, and endeavour to be a little more inſtructive.*" High time it is!—Let us, now, ſee how he keeps his promiſe. After this declaration, would not one naturally expect to read ſomething ſatisfactory in regard to the medicinal virtues of the waters? He forſakes his plan, and begins by violently attacking thoſe writers, who maintain the *ſprings* come from *rain*; and after puzzling his readers with the cramp words *Vegetation*, *Evaporation*, *Hydroſtatics*, *Æquator*, *Diameter*, *Mountains*, *Hills*, *Plants*, *&c*. he plunges them all head-long into the great ABYSS. His words are theſe (page 163) "*I think I have greater authority than any philoſopher, to be of a contrary opinion; I ſhall proceed upon the old doctrine of an* ABYSS *in the center of the earth, and water coming from thence, againſt all the laws of Hydroſtatics; declarative of the Almighty hand, which has ſo ordered it. I do not mean, that* GOD *is here the immediate agent; but that it is performed by natural cauſes, far beyond the reach of what is to be learned from Hydroſtatics. And here, I cannot but take notice of the modern way of explaining the grand operations of nature, by the common mechanical principles eſtabliſhed in arts and ſciences; and from theſe low-limited appearances, accounting for the moſt wonderful Phænomena in nature, and ſo giving laws to* GOD, *inſtead of* Glory."

TO be ſtill a little more *inſtructive*, he preſents his readers with *Refleſſioni ſupra l'Origine della Fontana, Cicero de Finibus, Homer and Plato* What a pity it is that *Ovid* did not juſt then whiſper into his ear,—

> *Nat Lupus inter Oves, fulvos vehit* UNDA *Leonos,*
> UNDA *vehit Tigres, &c.*———

Would not UNDA have been a fine word for his ABYSS ?

To account for the *equable heat*, and *impregnation* of his Waters, he refers us to mount *Ætna* and *Veſuvius*; thoſe he calls (*in his own ſtile*) *dry vent-holes*; theſe *watry vent-holes*; he ſuppoſes ſome cavern or *Abyſs*, in which he keeps heated air, for impregnating his Waters; and conceiving he had made a diſcovery, draws three *profound* Corollaries. 1. That the virtues of Mineral waters greatly depend on their volatile parts. 2. The difficulty of imitating ſuch waters, and 3. Their ſuperiority to medicines.

" *It is now high time* (continues our author) *to make ſome application of this impregnated air to Briſtol Water. What impregnates this*

*this air, I pretend not to ſay: and therefore have taken a different method of declaring my ſentiments upon it; chuſing rather to enquire into its virtues, than its principles.* A fine thought indeed! *and thus having finiſhed what I had to ſay, I ſhall conclude with obſerving, that as the parts of animals and vegetables bear witneſs to the ſcripture account of the* Deluge; *ſo, Mineral Waters, which cannot be explained, without a circulation of water from beneath, upwards, ſeem a ſtanding evidence of the truth of* Holy Writ, *in regard to what it ſays concerning the bleſſings of the deep, againſt thoſe* Naturaliſts *who teach that all* Springs *are from* Rain *only; and ſo pronounce on* God's works, *without attending to his* word."

Let us now take a view of his Modeſty. "*My deſign has been to acquaint Phyſicians at a diſtance, with the true virtues of Briſtol Waters. Were there any thing extant on the ſubject, that gave me ſatisfaction, I ſhould have ſpared myſelf this trouble; but, when I found, that the books wrote for this purpoſe, were very* *deficient; and as I was ſettled in this place, and owed my life in great meaſure to this water, I thought it might be commendable in me, to employ my leiſure hours upon a ſubject, in which my buſy ones were like to be ſo very converſant. I know the world too well, to commence author out of vanity this way. Let my readers accept of this as a Tabula Votiva, given out in acknowledgment of the eſcape I have had; the thing ſpeaks itſelf.*" To purſue the errors and abſurdities of this *performance*, which the author modeſtly calls *complete*, would take up a volume larger than the performance itſelf; let it ſuffice in general, to affirm, that thro' the whole, he rather obſcures than unravels the ſecrets of nature; he neither informs the phyſician, nor amuſes the reader. Inſtead of expoſing the errors of former authors by a regular courſe of experiments, (with his *uſual* academical pride) he condemns them in the lump; with other phyſicians, they partake of that arrogance peculiar to himſelf; and which gives him a title to the advice of a great poet:

"Launch not beyond your depth, but be
*diſcreet*,
"Mark well the point where Senſe and
Dulneſs meet."

THE Experiments which Dr. LUCAS has made on theſe Waters, ſpeak the Chymiſt, as well às the Enquirer. From a comparative Analyſis, between the Waters of *Bath*, and theſe, he makes the principal difference ariſe from the ſmall portion of *Iron* contained in the former, and makes a concluſion, which is confirmed by Experience, viz. That the Bath Waters poſſeſs all the Virtues of Briſtol Waters, and in a higher degree; ſuch a degree indeed, as would render them fatal, where the laſt prove ſalutary. *Bath Water* is a warm, ſubacid, chalybeate Water, rendered deterſive, and aperitive, by a native, neutral Bitter, and a muriatic Salt. It muſt relieve all diſorders which ariſe from the reverſe of Acids; *Choler*, *Bile*, or an *Alcaleſcency* of the Juices,

the

the feveriſh Commotions being previouſly allayed. And here, while we wonder at that amazing Chymiſtry of Nature, which renders Waters in general of ſuch efficacy, we may, at the ſame time, bluſh for our own ignorance, when we take a ſurvey of our moſt conſummate Labours compared to theſe.——As a proof of this, We find that a pint of Bath Water, contains *only* $\frac{1}{38}$th of a grain of *Iron*, 7 grains *Earth*, 10 grains of a mixed *Salt*, all united in a *Fluid*, heated twenty degrees above the blood of Man in a healthy ſtate. Thoſe Effects, which this mixture of *natural* Pharmacy produces, are ſo much ſuperior to the utmoſt ſtretches of Medical-Art, that we may wonder indeed; and thus, wonder may be ſtill turned into greater, when we conſider a fact which is daily experienced, viz. "Let Water be drank out of an *Antimonial Cup* never ſo long, it will continue to vomit; and yet, weigh the cup, it will be found to have loſt none of its weight."

# THE ANALYSIS OF BRISTOL WATER.

## CHAP. III.

SOME Writers have affirmed, that theſe Waters are impregnated with *Iron*; ſome, with *Alum*; ſome with *Lime*, &c. whilſt Others have aver'd, that they are the moſt *ſimple* Waters in the Univerſe.

It is a matter of ſome conſequence to the Public, that theſe Diſputes ſhould be cleared up. It is, particularly, incumbent on thoſe who pretend to direct their Uſe, to make themſelves acquainted, not only with their conſtituent parts, but alſo with their effects on Individuals, in different Diſeaſes, and on different Conſtitutions; the firſt of theſe is to be learned from *Analyſis*; the ſecond from Experience.

Such an *Enquiry* will enable the Phyſician to ſelect a few well-choſen Medicines; ſuch as will not jar with the *Principles* contained in the Waters, but rather add to their Virtues. Such a Practitioner will be able to do honour to his Profeſſion and juſtice to a Medicine, inimitable by Art; he will reſcue his Patient from the neceſſity of throwing himſelf into the hands of the Ignorant: for, he who preſcribes a medicine, upon a ſuppoſition that the Waters contain Principles, which they really do not, hazards the health, as well as the life, of his Patient; and is juſtly chargeable with Empiriciſm; which is neither more, nor leſs, than acting irrationally.

THIS Water, like many others, and perhaps, more ſo than ſome (by its tranſparency) appears to the eye, as one ſimple, homogeneous Fluid; but Experiments demonſtrate, what our Senſes cannot diſcover, viz. that Water is capable of diſſolving, and ſuſpending, the hardeſt Bodies, as well as the heavieſt Minerals.

LET the *vain and artful* Pretender impoſe upon the *ignorant*, let him jumble together Mixtures which abhor an union; let him (to avoid the ſcorn of apprentices) copy from Diſpenſatories. To gain his end, let him turn credulity into Gold.——The Man who has arrived at the Honours of his Profeſſion, by a proper gradation of Knowledge, ſcorns ſuch mean arts; he fears not the cenſures of Inferiors in the Art; he has turned it into a *complete* Science; while he labours for the recovery of his Patient, he feels his breaſt glow with the beams of Philoſophy, every Cure is a propoſition demonſtrated. To give up the taſk of inveſtigating Truth, favours of

Indolence, not to ſay worſe; for as we can reaſon only from what we know, it is our duty to follow the track of Reaſon, as far as Knowledge enables us to purſue her Paths.

WATERS are ſometimes found ſerviceable, where they were not indicated. Cures have been performed by the mixture of Medicines, which contradict their Principles: when ſuch Caſes are properly aſcertained, when we have no longer reaſon to doubt the Facts, we are to purſue the road of OBSERVATION; even in contradiction to HYPOTHESIS, we are to conſider that Chymical Analyſis differs widely from the Operations of Nature. We cannot imitate the *Gaſtric* Juices, the *acidity* of the waters may be aſſiſted by a latent *acidity* in the Stomach, ſo far as to neutralize an alkaline Medicine, and thereby perform the very Cure which was wanted; Obſtinacy in ſuch caſes proceeds from a vain Opinion, that the Chymiſtry of Nature ought to bend to our imperfect Diſcoveries.

To illuſtrate this by Example, Dr. *Lucas* has fairly diſcovered that *Bath Waters* decompoſe *Soap*. He infers, that "*ſimple water may be as well taken for the baſis of the courſe, and ſo compounded at pleaſure.*" He gives this caution, "*Let the* Soap-*mongers hence learn, not to counteract their boaſted Agent.*"—But Experience is againſt him; for various Caſes of obſtructed Livers come to *Bath*, Patients have taken all ſorts of Deobſtruents at home, duly adminiſter'd, with *Soap* in great quantities, and have not found their Cure; yet, in their common regimen, they muſt have uſed ſimple Water enough: Such patients have come to *Bath*, they have drank the Waters alone, the Waters have heated them, and exaſperated their other Symptoms, they have not been able to carry off that *yellow tinge* which is the conſtant attendant on an obſtructed Liver, they have been obliged to leave off the Waters. *Soap* has been adminiſtered together with the Waters, and the Patient found immediate relief, the Symptoms have vaniſhed, and complete cures have been performed. Theſe Patients have returned, have relapſed, have been judiciouſly treated, *Soap* has again been given at home, and to no purpoſe; they have come back to *Bath*, have again tried the Waters by themſelves, without effect. *Soap* has again been added, and a ſpeedy cure obtained. The truth of this general aſſertion, will be confirmed by every Phyſician, who has been truly converſant with the Waters.

THE Lady's caſe related in the ſixth chapter, puts this remark beyond diſpute.—To this let me add another equally convincing. "A Clergyman, ſixty years old and upwards, of a corpulent habit, and choleric "Diſpoſition, labouring under an inveterate "*Scurvy*, his legs ſwell'd and hard, with "large, deep and foul Ulcers, wandering "pains, itching, *&c.* came to *Bath*. He "drank the Waters in too great quantity, "he continued generally in the kitchen of "the King's Bath, ſweating and broiling

" for an hour and a half at a time: I often
" told him, that there was danger of throwing an Inflammation upon his Liver, already vitiated, and obſtructed, as is the caſe
" in all ſcorbutic diſorders. He laughed
" at my prognoſtic, ſcorning the dull beaten
" track. I found him, one day, very ill,
" with every ſymptom of a *Jaundice*, rather
" black than yellow, with a fixed pain in
" the region of the Liver. He was immediately bled, took a gentle purge of *Senna*,
" *Rad, Curcum, Rub Tinctor, Rhubarb, &c.*
" which, as is common to people of unſound
" livers, operated immoderately; his pulſe,
" ſtrength, and ſpirits ſunk conſiderably,
" Nature was on the point of yielding; the
" ſymptoms, however, abating, I order'd
" him to take two drachms of *Nitre* in a
" glaſs of water, thrice a day; a Medicine,
" in this caſe, greatly recommended by Dr.
" HEISTER; I allow'd him to ſwallow as
" much Soap as he pleas'd: I indulg'd him
" in the free uſe of Rum-punch enrich'd

" with Sugar and the juice of Oranges;
" adviſing him to eat as many as he pleas'd.
" His Jaundice vaniſh'd, and what is extraordinary indeed, his Ulcers, old and obſtinate, cicatriſed; he became really a
" new man, and continues now (after ſeven
" years) in better health than he had enjoyed for forty before, with the help of
" Lime-water only."

I was preſent at Dr. *Lucas's* Experiments; they were accurate and fair. Obſervations and Matters of fact, I would, nevertheleſs, prefer to experiment; the one ſpeaks truth, which is not the leſs ſo, becauſe I cannot conceive the *Modus operandi*; the other is daily liable to fallacy as well as error.— But to proceed,

*Mineral Waters* are ſo nicely compounded by nature, that the moſt accurate analyſis can never comprehend the exact proportions of their Impregnation; ſome parts are volatile, while others, by the fire and other mediums, undergo ſuch changes as never exiſted in the Compound.

One of the hand-maids of medical knowledge, then, is *Chymiſtry*, by the help of which, we are enabled to make certain bodies miſcible, and capable of union, which naturally had not the leaſt tendency.—By this, we are alſo taught the art of ſeparating the moſt compound mixtures into their original Principles or Contents; and to exhibit each in a disjunct ſtate, to the cognizance of our Senſes. To this art then, muſt we have recourſe, in order to aſcertain the matter now in diſpute, *i. e.* to inform the Public, with preciſion and truth, what are the conſtituent parts of theſe ſalutary Waters.

There are indeed ſome particulars, which fall under the cognizance of our ſenſes, theſe I ſhall mention firſt:

Favoured then, with the aſſiſtance of my Friend Dr. Baylies, who is Maſter of a neat experimental Apparatus, as well as a cabinet of the *Materia Medica*, which might claim a place in any Univerſity, and which the Owner not only poſſeſſes, but alſo underſtands. We proceeded in the following manner, at the Pump; and diſcovered,

1. That Bristol-Water, received in a glaſs, appears, to the naked eye, colourleſs, pellucid, and manifeſtly impregnated with Air, ſparkling and bounding through its ſubſtance, in the form of little bubbles, as if the whole had been in a ferment. This Air, or elaſtic matter, appears to be the cauſe of the inteſtine motion of the fluid, and of the facility wherewith the globules roll over each other, as alſo of the Water's keeping unputrified.

2. To the *Taſte*, they are particularly pleaſant, and ſoft; leaving a ſort of ſtipticity on the palate.

3. To the *Smell*, they are quite inodorous.

4. To the *Touch*, they are luke-warm only. In *Farenbert's* Thermometer, they raiſe the Mercury to 76 degrees, after pumping all the day.

WEIGHED, there is little ſpecific gravity, between them, and diſtilled Water.

THEY keep well, in Bottles, cloſe ſtopped, loſing only a portion of that elaſtic Air, which evaporates before the bottles can be corked.

BY keeping, they acquire no foulneſs, as moſt other Waters do, nor any ill ſmell.

LET us now ſee what CHYMISTRY informs us.

## EXPERIMENT I.

A GLASS of Water, poured upon a few Grains of *Sal. Armoniac*, immediately diſſolved it with a very ſenſible effervеſcence.

## II.

A FEW drops of *Spir. Sal. Armoniac*, with Lime, dropped into a Glaſs of Water, at the Pump, produced the ſame effect, as the former.

## III.

A SOLUTION of *Sal. Tartar*, or any fixed alkaline Salt, liquified by the moiſture of the

Air, or the addition of a ſmall quantity of diſtilled rain-water, added to the Water, not only produces the ſame effervefcence, as the Volatile Alkalis did, but gives the whole a milkineſs; which, on ſtanding, goes off, affording a whitiſh, light, earthy precipitate, as the milkineſs diſappears.

## IV.

A SOLUTION of *Soap*, dropped into a glaſs of Water, inſtantly curdles, and after ſtanding a little while, the ſurface becomes covered with a greaſy ſubſtance; the Water underneath, loſes its pellucidity, and appears a little milky, or turbid.

## V.

To ſeveral Glaſſes of common Water diſtilled, the ſeveral ſubſtances mentioned, were added. No perceptible alteration.

## VI.

IN ſome glaſſes of common water diſtilled were dropped a few drops of *Spir. Vitrioli*, in others, other Mineral Acids; then were added, in one Glaſs, the Volatile Alkaline Salt; in another, the Volatile Alkaline Spirit; the fixed Alkaline Salt, and ſolution of Soap. Whence aroſe the ſame Appearances as when theſe laſt ſubſtances were before added to the ſimple *Briſtol Water*.

## COROLLARY.

FROM theſe ſeveral experiments, it is evident, that theſe Waters do contain an *Acid*; tho' the ſame is not to be diſcovered by our Senſes. For, by the means of that ſame *Acid* it is, that in the two firſt Experiments, the efferveſcence is produced between the *Acid* of the Waters, and the *Alkaline* principles of the Salt and Spirit. And in the third Experiment, the additional circumſtance of the milkineſs ariſes from the fixed Alkaline Solution, attacking the latent *Acid* in the Waters more ſtrongly, than did their calcarious Earth; by means of which, it is no longer diſſolvible, but becomes cognizable to our ſight, and forms a white precipitate;

cipitate; which, while united with the *Acid* was in a ſaline ſtate, and conſequently ſoluble in any pure Water.

Thus alſo in the fourth Experiment, the ſame cauſe ſubſiſting, the *Acid* of the Water uniting with the *Alkali* of the *Soap*, the *Oil* is no longer miſcible in Water, the *Soap* becomes decompoſed, the Alkaline Salt adhering to the *Acid*, the Oil ſwims on the ſurface in its natural form.

If the *Briſtol Water* be kept, but one day, tho' corked never ſo cloſe; or if it is made to boil over a Fire, and theſe Experiments made; neither the Effervescence, nor the Decompoſition will follow; but the milkineſs repreſented in the third Experiment will be the ſame, and the ſame Precipitate will enſue; for the Effervescence was the effect of the *Acid* of the Waters, which had not diſſolved any other body; but the milkineſs, and Precipitate, in the third Experiment, is the conſequence of a ſtronger attraction of the Acid by the Alkaline Salt added, than that with which it was before united, and incloſed, by the abſorbent earth of the Waters; by the deſtruction of which, the Waters are robbed of their power of diſſolving earthy ſubſtances.

HENCE it is manifeſt, that the *Acid* of theſe Waters is of a *Volatile* nature, and ſoon eſcapes; yet is it capable of being fixed by any *earthy alkaline* ſubſtance; with which when it meets, it conſtitutes a *neutral* Salt, ſimilar to what is found in moſt medicinal ſprings.

A VARIETY of general experiments might further be made, by the exchanging the colours of different tinctures, with the addition of theſe Waters. Theſe might alſo farther illuſtrate the facts; but as many of thoſe have been found to be fallacious, and tend more to *amuſe* than *convince*, I purpoſely omit them. The foregoing experiments, demonſtrate the truth of what they were intended to prove, viz. "That the *Briſtol Hotwell-Waters contain an Acid; and that this Acid is volatile.*"

Now, That *Acids* are not all ſimilar, is well known; and is demonſtrable by abundance of experiments. The following will, *I hope*, give us ſome light, whereby we may judge of the nature of the *Acid*, in Briſtol Waters.

## VII.

Take a glaſs of water, drop into it, a ſolution of ſilver in Spirit of Nitre, and it will inſtantly grow turbid, or rather milky, and ſoon depoſit a white precipitate.

## VIII.

In a glaſs of water, pour a ſolution of lead in the ſame Acid, and the ſame effects will be produced.

## COROLLARY.

From theſe two experiments, it is demonſtrable, that a portion of *Sea*, or *Marine* ſalt, is contained in theſe Waters; for, by the union thereof, with the Nitrous Acid, an *Aqua Regia* is formed, which, though a ſolvent for gold, is not ſo for ſilver,

ver or lead; and, in conſequence thereof, this precipitation enſues.

## IX.

In a glaſs of water, pour a ſolution of Quickſilver, in Spirit of Nitre, it inſtantly grows turbid, and affords a yellow precipitate, of the very colour of *Turbiths Mineral.*

## COROLLARY.

From this experiment alone, we may conclude, that the *Acid* of our Water, is of the *Vitriolic*-kind; and that it attracts or is attracted, by the *Mercury*, more ſtrongly than the *Acid* of *Nitre,* which was the Acid uſed in the ſolution. For Mercury diſſolved in Oil of Vitriol, on the addition of Water, affords the ſame coloured Precipitate; and, we know no other Acid that will produce this effect.

Hence alſo, we may be aſſured, that this Water is impregnated, not only with a *Volatile Acid*, but alſo that this *Acid* is of the nature of a *Vitriolic,* and *Marine Acid* united together; the virtues of which, when diluted with pure Water, we have reaſon to conclude, muſt be the ſame with *Briſtol Water*, drank on the ſpot. By means of this *Acid* it is, that thoſe Waters become impregnated with their other fixed principles. When this *Acid* has eſcaped; the Waters become ineffectual: yet though they are greatly changed, by boiling, or keeping, when an Acid is added to them, they produce the ſame Phænomena with *Alkalis*, as tried at the Fountain-head, without Acids.

### X.

To a glaſs of water, let a few drops of the Tincture of *Galls* be added, and it affords no other change of colour than it does with diſtilled water.

### XI.

To a glaſs of diſtilled Water, in which ſome *Sal. Martis* was diſſolved, a few drops of *Tincture* of *Galls* were added; the purple colour was immediately produced.

## COROLLARY.

HENCE it is plain that our Waters contain no *chalybeate* principle, volatile or fixed; elſe would the ſame appearance be ſeen in the tenth, as in the laſt experiment.

## XII.

INTO a glaſs of Briſtol Water, ſome drops of *Spir. Sal. Armon.* were dropped; no change of colour, other than when dropped into diſtilled Water.

## XIII.

INTO a Glaſs of diſtilled water, a Solution of *Copper* was poured, upon which was alſo poured ſome *Spir. Sal. Armon.* A faint Blue immediately enſued.

## COROLLARY.

HENCE may we conclude, That this Water contains nothing of a *Coppery* ſubſtance.

## XIV.

FIFTY Pints of this Water, *Wincheſter-Meaſure,* were evaporated in an open Veſſel, over a gentle Fire. Firſt, it loſes its pellucidity, and gradually depoſits, a pale terrene, light, chalky ſubſtance, like that with which the Tea-kettles are lined, in which this Water is boiled; thus is the Water decompoſed, and ſpoiled of its Mineral-Acid-Spirit, which rendered it hard; it now becomes ſoft as Rain-Water, and has no more virtues. And when the whole humidity was evaporated, it afforded a *Reſiduum* which weighed 240 Grains, of a ſaltiſh, bitter, taſte; but not perfectly diſolvible on the Tongue.

## XV.

FIVE Scruples of this Reſiduum being digeſted in a Sand heat, in four Ounces of diſtilled Rain-Water, 'till all was diſſolved, that was diſſolvible, and then philtred thro' *Cap-paper*; there remained a white earthy Subſtance, undiſſolvible in freſh, diſtilled, Water, or even in the Acid of Sea-Salt; weighing 56 Grains, and which is convertible into *Lime*, though without a calcining heat, it is no more than a ſimple *calcarious* earth, which, partly diſſolves in the Acid of ſea-ſalt, though there remains ſtill a part undiſſolvible, a *Selenite.*

ARE we, hence to conclude, that theſe Waters contain *Lime,* as ſome have affirmed, and many believe, even to this day? No, for though they contain a principle convertible into lime, it does not therefore follow, that they ſhould partake of real lime.

THUS.——There are many, who believe, the real exiſtence of *Sulphur* in the *Bath Waters*; becauſe, in accounting for the heat of Mineral Waters, it is allowed that the heat proceeds from that ſubtile, elaſtic, and penetrating Vapour, which ariſes from beds of ſulphureous *Marcaſites,* heated or kindled, by the admiſſion of external air. But, theſe Gentlemen ought firſt to conſider, that, as there are *Pyrites* compoſed of Iron and Sulphur, ſo there are alſo Pyrites of all colours; and which take in all ſorts of metal, as well as *Cobalt*, *Arſenic*, *Antimony*, *Biſmuth*, *Alum*, &c. And till they are ſure of the nature of that Marcaſite by which the Bath Waters are impregnated, how can they pronounce them *ſulphureous*?

BUT again.——Suppoſing they were actually aſſured that the Pyrite or Bed of Marcaſite which heats the Bath Waters was really compoſed of Iron and Sulphur; are they hence to infer that the Bath Waters contain real *native* Sulphur? The ſuppoſition is abſurd; for to heat or impregnate any Water, we muſt ſuppoſe that the bed of Pyrite is actually ſet on fire, by the admiſſion of external air. This mixture then, of *Iron* and *Sulphur*, being once ſet on fire, is not eaſily extinguiſhed, till the ſulphur is decompoſed, till its *phlogiſton* is conſumed by fire, and its Acid united to the Iron. With what then will this maſs be able to impregnate water? With a ſolution of *Iron*, *Martial Vitriol*, and with nothing elſe.—

For once to indulge thoſe who are ſo fond of Sulphur, we allow them, that the Bath Waters may be heated, as well as impregnated from a neighbouring bed of Pyrite, whoſe compoſition may be *Iron*, and *Sulphur*; ſo far, they are ſulphureous; but that ſulphureous Waters ſhould exiſt without that *phlogiſton*, which is inſeparable from ſulphur, is abſurd. Nor is there one Grain of *Sulphur* native or factitious, in all the Bath Waters. Experiments, eaſy and obvious, with a very little reading and attention might remove their prejudice; but opinions when they are ſanctified by time (as Mr. *Locke* well obſerves) become obſtinate.

## XVI.

THE ſaline ſolution, which paſſed the Philtre, evaporated, yielded 40 Grains of ſaline Matter. This Salt (by a variety of Experiments) is found to be *neutral*; being the volatile Mineral ſpirit and Alkaline baſe of the Waters united together.

## XVII.

THIS Salt ſprinkled on live coals, neither *ſwells* into *bubbles*, as *Alum* does, nor emits *white* flame, as *Nitre*; but calcined with *charcoal*, it imbibes the *inflammable principle*, and forms a *Hepar-ſulphuris*.——By the air, it increaſes in weight, and grows white, as if it was covered with meal, if it be firſt ſeparated into tranſparent cryſtals, which is eaſily done, after a careful evaporation, and keeping it in a coal place.

## COROLLARY.

HENCE, may we be aſſured, that this Salt, is neither *aluminous* nor *nitrous*; but that it is a pure *neutral ſalt* ſimilar to that of *Glauber's*; which conſiſts of a mineral, active ſpirit, and an alkaline baſe; to which, from the following experiment, ſome portion of *Sea Salt* adheres, as nothing but the Sea Salt produces the ſame effects.

## XVIII.

INTO a ſolution of this Salt pour a few drops of a *ſolution* of *Silver,* in *ſpirit* of *Nitre;* and, it inſtantly throws up light clouds, which fall in the form of a white Precipitate.

## SUM of theſe EXPERIMENTS.

FROM theſe ſeveral Trials, we may fairly conclude, 1. That thoſe who have deemed *Briſtol Water* to be a ſimple elementary Fluid, have founded their opinion merely upon ignorance.

2. THAT thoſe who have charged them with *Iron, Nitre, Alum, Vitriol, Sulphur, Lime,* &c. have either grounded their Opinions without Experiment, or have erred in their Analyſis.

IT now remains to affirm *poſitively,* what Principles conſtitute BRISTOL WATERS. And here, we may conclude that they contain,

1. The Spirit.
2. The pure Element.
3. A Vitriolic Acid.
4. A Marine Acid.
5. A Neutral Salt.
6. An Abſorbent Earth.

# THE CAUSE of HEAT IN MINERAL WATERS.

## CHAP. IV.

AS Waters, in a great meaſure, owe their Virtues to their HEAT, or Temperature; it may, perhaps, be ſatisfactory, as well as inſtructive, to know how Waters are heated, and impregnated.

THERE were Philoſophers, as well as Poets of great name, who accounted for the *Heat* of Waters, from the diſcovery of Sulphur, Bitumen, or Foſſil coal, in the neighbourhood of ſuch Waters.——But, in order to heat, theſe muſt be actually ſet on fire, and continue to burn. What ſhall we ſay then of Hot Waters found in places, where ſuch fires never actually exiſted?

AN immenſe quantity of *fire* was placed by ſome fruitful brains in a great cavern, in the centre of the earth, ſuppoſed to be the cauſe of ſubterranean *heat*, of the *origin* of ſprings, cold as well as hot, and of the production of Medicated Waters. KIRCHER, BLONDILE and BURNET, have framed many curious romances from this Hypotheſis. But, in delving into the bowels of the earth, no proof, or veſtige of ſuch central fire has ever yet been found.

PARACELSUS ſuppoſed the heat of Waters to be *innate*, created ſo, from the beginning.

OTHERS again deduced the *heat* of Waters, from the mixture of *Acids* and *Alkalis*. They ſaw that quick-lime mixed with water, produced *heat*; they hence, vainly ſuppoſed the actual exiſtence of unſlaked Lime. But how is this Lime to be produced without actual fire, and how are theſe Waters to be impregnated, where there are no Volcanos? Beſides Lime once ſlaked, could neither heat, nor impregnate any more.

OTHERS accounted for the Heat of Waters, from the exhalation of certain *Acid* ſpirits, acting upon bodies of different ſorts. —But there never was found, in Nature, any other Acid, excepting that of *Vitriol*, and this never in ſo liquid a ſtate, as to mix with water ſo as to occaſion heat.

BERGER and LISTER were the firſt who aſſerted that the PYRITE was the cauſe of *Heat* in Waters; Dr. FRED. HOFFMAN has adopted their doctrine, and ſo has Dr. LUCAS.

THIS Mineral, was known to the Greeks by the name of λιθος Πυριτες, to the Latins, by the name of *Lapis Pyrites*, and to the Arabians, by the Name of *Marchaſita*, which latter is retained in moſt modern Languages

The Pyrites is of all colours, of all ſhapes, and compoſed of all ſorts of metals, though it is chiefly compoſed of *Iron* and *Sulphur*, hence it is found ſo extremely combuſtible; it catches fire above ground, and burns till all its ſulphur is conſumed, and all the Iron, or Almuinous Earth is diſſolved in its *Acid*, whence *Martial Vitriol, Copperas*, or *Alum*.

If then a bed of Pyrite under ground, catches fire by the admiſſion of external air, admitted through the cracks or fiſſures of rocks, it continues to burn with ſuch a ſlow conſumption of its materials, as accounts for the duration, equality and uniformity of *Heat*, in Mineral Waters.

This Pyrite is known to be the Miners bane, it exhales a ſubtile acid vapour, which poiſons the air, and is ſometimes, ſo charged with *Phlogiſton*, that it burns with inexſtinguiſhable fury. At *Whitehaven*, this vapour is carried out of the pits by proper funnels or vents, and ſet on fire, at its exit; by which it is made to anſwer the purpoſe of a light-houſe for the ſhips, while, thus, it is prevented from extending its fury within. *Berger* tells us of whole rich ſulphureous mines being actually deſtroyed in *Miſnia*, for want of ſuch vents.

THE Pyrite abounds univerſally; ſhells of all ſorts, are filled with this Pyrite. The Conflagrations of *Ætna* and *Veſuvius* are occaſioned by the ignition and combuſtion of this Marcaſite. Heat rarifies air and water, and theſe confined, produce exploſions and earthquakes. Hence alſo, may we account for Thunder, Lightning, Meteors, and ſhowers of Mineral Particles: PLINY, AGRICOLA and BERGER, favour this opinion.

IF the Pyrite then alone, can contract heat and fire, we may eaſily conceive how it communicates its heat to bodies which ſurround it. Waters paſſing over a bed of Marcaſite, thus ignited, partake of its ſubtile vapour, contract heat, become charged with whatever particles were ſoluble in water; and thus impregnated, they are poured out on the face of the earth. Hence the variety of medicated Waters, according to the ſubſtances of which the Pyrite conſiſts, Chalybeate, Sulphureous, Vitriolic, Aluminous, &c. Hence are Waters hot, cold, or temperate, according to their diſtance from the bed of Pyrite. Some Waters are impregnated, without being heated, and ſome are ſimply heated, without being impregnated, this depends upon various circumſtances.

To the heated Pyrite, may the *heat* of Mineral Waters in general be aſcribed. To the exhalations ariſing from this Mineral heated, may be aſcribed, the *Volatile Principles*, the *Phlogiſton*, and the *Acid* demonſtrated in Waters. To the latter, the ſolution of *Earth*, as well as of Salts.

# THE Contents of Briſtol Water, WITH THEIR VIRTUES.

## CHAP. V.

IN demonſtrating the *Principles* contained in the *Waters*, I have purpoſely, avoided a large train of Chymical, and Philoſophical Experiments; I have contented myſelf with a few that are eaſy, ſimple, and concluſive. With Dr. FRED. HOFFMAN, I propoſe, to examine each INGREDIENT, and to enumerate thoſe ſymptoms, which, *ſeparately*, or *collectively* they bid fair to remove.

## I. THE SPIRIT.

THE firſt *Principle* of Water, and that which it ſooneſt loſes, is its ſubtile *Æther*; which is the origin of its truly ſpirituous part; and that which preſerves it from putrefaction.

Lord BACON judges that to be the beſt Water for common uſes; which evaporates faſteſt by boiling.

HIPPOCRATES pronounces that to be the lighteſt and beſt Water; which is ſooneſt heated, and ſooneſt cooled.—Again. Thoſe are certainly the beſt Mineral Waters, which, when taken up, at the pump, diſcharge the greateſt quantity of bubbles; for theſe bubbles are nothing elſe, but the ſubtile æthereal ſubſtances, reſiding in the pores of the fluid. Hence it is, that the briſk *ſpirituous* Waters of Cold Springs, break the bottles: the labourers are obliged to let the bottles ſtand open, for ſome time before they cork them.—Hence may we learn the neceſſity of drinking our Waters at the pump.

MINERAL WATERS loſe their virtues, ſooner in a hot air, than in cold.—— Hence appears the reaſon for drinking them early.

MINERAL WATERS, which have been long expoſed to the air; thoſe alſo, which have been boiled; entirely loſe their medicinal virtue, taſte, and ſpirit.—Hence appears the abſurdity of thoſe who warm their Water in an open veſſel. The beſt way to heat them is by putting the bottle corked into a veſſel of warm water.

WE have proved, that briſk Medicinal Waters contain a very ſubtile, active, and elaſtic *Principle*, and this I take to be the effectual part; or as it were, the SOUL that gives them ſurpriſing virtues.

THIS penetrating *Spirit*, is perceptible to the ſenſe, filling the head, making the drinkers heavy or ſleepy: this frequently happens at *Cheltenham*, and oftner at *Bath*; and the Waters of *Pyrmont* cannot be drank at the ſpring, nor till a part of the ſpirit is exhaled.

THIS ſpirit heats and cheriſhes the body, encreaſes the appetite, raiſes the pulſe, and gives a roſy colour to the cheeks.

THIS ſpirit is alſo the cauſe why the Waters paſs ſo nimbly; why they open obſtructions, ſtrengthen the fibres, and promote all ſorts of excretions.

WHEN this principle is exhauſted, Mineral Waters become no better than common Water.

THIS ſpirit is blended amongſt all the ſulphureous parts of Minerals; and pervades all the lower regions of the earth; it becomes the animating *principle* of Minerals, and the true cauſe of thoſe changes, and effects, which happen in the bowels of the earth.

THIS is the reaſon why there is ſuch difficulty in imitating Mineral Waters; for, were their virtues, owing to a ſolution of their ſolid ſubſtances, theſe could be collected after evaporation; and mixed with ſimple Water at our pleaſure.

CAN this moſt efficacious principle of Mineral Water, be ſeparated by art, ſo as to be kept as a Medicine for uſe?——— Attempts have been made, by the *Sieur de Clos*, and others, but in vain. Dr. SHAW ſeems to think, that this *Spirit*, is not a corporeal thing, but rather an action or effect, depending on the conflict between *Acids* and *Alkalis*.

THE following experiment gives a hint for imitating ſome of the natural Mineral Waters by art; and obtaining a Mineral Spirit, if it can be caught.

PUT an ounce of filings of iron into a phial; drop a quantity of pure ſtrong Oil of Vitriol upon it; add three parts Water, to the mixture; there ariſes immediately, a violent frothing ebullition; and, at the ſame time a violent pungent ſulphureous vapour endeavours to break out; ſo as ſcarce to be contained in the phial, by the ſtrength of the finger: if, juſt after compreſſing the vapour, the finger be removed, and, a flaming candle applied, there immediately burſts forth an exploſion, with a crack and a flame, reſembling lightning.

If a way could be found to obtain a large quantity of this vapour or ſpirit; it might anſwer in virtue, to the volatile aereal ſpirit of Mineral Waters.

This vapour, tho' totally ſulphureous, has nothing of the fetid ſmell of Brimſtone; the reaſon is, that this ſpirit, is not the produce of common Sulphur, extracted by a culinary fire, which partakes of the empyreumatic Oil.

Those who believe the actual exiſtence of *Sulphur* in the *Bath Waters*, may be convinced, that the *Sulphur*, which they mean, is not the work of Nature.——They have reaſon much more to be ſatisfied; for, in place of common Brimſtone, they have a far more noble and more powerful Medicine; I mean, that elaſtic, penetrating Spirit, which pervades all things.

THE *Volatility* of *Spirit* is elegantly illuſtrated, by the Great Philoſopher and excellent Anatomiſt MUNRO. He ſays,—" I " mix'd filings of Iron, Oil of Vitriol, and " Water, in a Florence bottle, which I laid " on its ſide; having fitted another to it, " in which I had put ſome fountain-wa- " ter. The fumes which aroſe in efferveſ- " cence, came over into the other glaſs: " when this effervefcence was over, I re- " moved the glaſs with the water, which was " quite limpid, but had a ſtrong empyrcu- " matre ſmell: its taſte was, firſt pung- " ènt on the tongue; and then, the aci- " dulous taſte prevailed. When Tincture " of Galls was mixed with it, it became " of a red purple, but faint colour, which " held many days, without precipita- " tion. Next morning the empyreuma " of the remaining Water was gone; and, " it had a very agreeable briſk Spaw-taſte: " this went off in leſs than a day: a " ſmall quantity of the ſaffron powder was

“ fallen to the bottom; and, the galls had “ no effect upon the water.”

BUT to proceed.—We may conclude that the virtues of this; as well as of all other MINERAL WATERS, greatly depend upon their SPIRIT.

## II. THE PURE ELEMENT.

THIS is the receptacle or vehicle of all the other ingredients; and far exceeds them all in quantity.

PHYSICIANS are ſurely to blame, in not examining thoſe Waters, where they practiſe: ſuch a knowledge would greatly facilitate the cure of diſeaſes, as well as prevent them: the reaſon of neglect in this particular, ſeems to be owing to an indifference of thoſe bleſſings, which Providence beſtows without labour or expence.

THERE are many ways of trying the virtues and qualities of Waters. People who are accuſtomed to drink water, can diſcover the beſt, by the taſte; by the Water Thermometer alſo, or the Air-pump. The lighteſt Waters ariſe the ſooneſt, in *Diſtillation*; and ſo in *Boiling*, Waters loſe their volatile ſpirituous parts. Hence appears the miſtake of making COFFEE with water that has boiled too long.—There are alſo experiments, eaſy and obvious.

Firſt, DROP Oil of Tartar, into a glaſs of Water; if it is pure, as Rain Water diſtilled, the liquor will ſhew *no* change: If impure, the Water turns milky; eſpecially, if the Water abounds, with a *Chalky Earth* or *Common Salt*.

Secondly, A SOLUTION of *Silver*, in *Aqua Fortis*, turns crude Water thick, and grey-coloured: If it participates of *Iron*, almoſt red.

Thirdly, IF it contains *Vitriol*; an infuſion of *Galls* will turn it black.

SPRINGS widely differ from each other. Some Waters are hard, crude, and rough; Others again, are ſoft, mild, or ſmooth: the firſt are accounted bad; the laſt good, or wholeſome.

ICE or SNOW WATER, is reckoned, by HIPPOCRATES hard: the light parts are diſſipated; the groſs are left behind. *Snow Water* produces ſwellings in the Glands of the throat, well known to thoſe who live at the foot of the *Alps*, *Pyreneans*, &c.

"*Quis, tumidum guttur, miratur ſub Alpibus?*" Says *Horace.*

IN the middle of *Ice*, there are bubbles, which, by their elaſtic quality, encreaſe the bulk of the *Ice*; and cauſe it to poſſeſs a larger ſpace, than when in the form of Water: this is the reaſon, why bottles or earthen veſſels, in which Water freezes, generally burſt.

WATERS found in Mines; as well as thoſe which deſcend from rocks, or run through *chalky beds*, are hard: they are impregnated with rough, earthy particles: *Hippocrates* condemns them as unfit for common uſe; they paſs not by urine; they bind the belly, hinder the ſecretions, generate wind, breed ſtones, rot the teeth, and relax the gums. Such Waters are uſed by artificers, for making of *Paſte*, and forming of powdered Alabaſter into *Plaiſter* of Paris.

STAGNANT WATERS are unwholeſome; as alſo thoſe which ariſe from ſprings in open Champaigne countries, having a muddy, unctuous, earthy, or bituminous bottom, though frequently refreſhed by rain, they grow turbid, and fetid: the ſun-beams exhale their uſeful, ſpirituous parts.

THOSE Waters are *wholeſome*, which are *light*, *ſoft*, and ready to paſs through the excretory veſſels.

RAIN WATER claims the firſt place; the *Chemic*-ſun diſtills it; the ſoft, light parts, are exhaled, digeſted, and enriched with the univerſal æthereal and ſulphureous ſalt, or exalted Nitre: the ſaline, groſs and heavy parts are left behind. This Water is better fitted than any other for the nutrition of vegetables; the brewing of ale; infuſing of herbs; baking of bread; drawing of tea: and waſhing of the *Calces* of Minerals. It ſoon corrupts, becauſe it abounds with ſulphureous, animal, or vegetable exhalations; but this is eaſily remedied, by pouring it off after it has ſtood and ſettled.

SPRING WATERS are wholeſome, when they lie high, riſe in clean earthy hills, and run upon a gravelly bottom, or pure hard clay; provided they be taſteleſs, limpid, tranſparent; cool in the ſummer, warm in the winter; and receive the riſing ſun. For, Waters paſſing thro' a porous, ſpongy earth not being diſſolved thereby, are filtred, percolated and purified, according to a cuſtom in Italy, and hot countries; where they paſs their Stagnant or Tank Water, thro' a ſpongy mortar; vulgarly called a *dreeping-ſtone*; one of which I ſaw on board the *Antelope* man of war ſtationed at *Briſtol*. The Captain told me that he made uſe of the Water of that ſpring over againſt the Hotwell on the oppoſite bank of the river, commonly called the *Mill-Spring*. Dr.

*Lucas* analyſed this water, and declares, that he found not its equal in Britain; being remarkably pellucid, inodorous, taſteleſs, and ſparkling; weighing one grain lighter, than diſtilled rain Water; and, being evaporated to dryneſs, it yields only five grains of pure elementary, calcarious earth, to a pint. And yet, when I examined this filtering-ſtone, there ſeemed to be a thick, browniſh cloud hanging in the body of the Water; the ſides and bottom appeared very foul; though the Captain aſſured me, that the ſtone had been well ſcraped and bruſhed that very morning.

RIVER WATER cleared of its filth by ſtanding or filtring, put into large earthen-veſſels, and depoſited in a cellar, keeps better than by any other method. Thus, is the Water of the TIBER (muddy enough as it runs) clarified by people of faſhion, at Rome, and preſerved for years.

RAPID RIVERS afford a lighter and more ſubtile Water. Thus, the Water of the

RHINE and the RHONE, which deſcend from the higheſt mountains, are found to be lighter on the balance, than that of other rivers. And, it is remarkable, that ſhips coming out of the MAINE, into the RHINE, draw much more Water in the latter.

JACOB SPON (in his *Obſervationes circa Aquam Rhodan*) aſſures us, that this Water kept in jars in a vault, will continue ſweet for an age. The floweſt rivers, are (however) fitteſt for domeſtic uſes.

WE now proceed to enumerate the virtues of the *ſimple pure element*.

A KNOWLEDGE of the laws of *circulation*, *ſecretion*, and *excretion*, informs us, that our juices require a conſtant motion: they contain particles ſaline, unctuous, mucilaginous and earthy: in a ſtate of warmth, reſt, or moiſture, thoſe particles are corruptible. That this circulation may be kept up, there is a neceſſity of a conſtant addition and recruit of particles aereal, æthereal, fluid and elaſtic: but how can theſe particles, be aſſimilated, or mixed with the blood, without the interpoſition of the elementary fluid?

BLOOD drawn from a man, in health, contains two-thirds Serum; and one part red Globules. Can it then be ſurpriſing that water ſhould mix with water? That this happens, we can no longer doubt, when we know, how ſoon watery liquors paſs by *Urine.*——In *Warm-bathing*, how conſiderably is the weight of the body encreaſed; notwithſtanding the great expence of Sweat?———Open the Abdomen of a Dog, and throw in a quantity of warm water, it will all be ſoon abſorbed.—*Draſtic* Purges diſcharge Water contained in the Abdomen. Dropſies are, ſometimes, actually cured this way.———Dropſies have been carried off by *ſpontaneous vomitings* alſo; inſtances of this kind are ('tis true) hardly to be met with, either in Hiſtory, or Practice; " Yet this actually happened to

“ an eminent Phyſician of *London*, about “ two years ago: he was once tapped for “ the Dropſy, and had a temporary cure; “ the Abdomen filled again; a ſecond *tapping* was meditated, a ſpontaneous vomiting intervened, by which the whole “ was diſcharged, and the Abdomen has “ not ſince filled.”—Dropſies have alſo been cured by ſweating.——And yet, theſe ſurpriſing effects happen, no other way, than by being aſſimilated with the blood, and going the round of the circulation.

If then it is apparent, that Water does eaſily mix with the blood; can there be any remedy in nature, that bids ſo fair for *preventing*, as well as *curing* diſeaſes; for preſerving health, or prolonging life?

The duration of life, depends upon the circulation of the fluids: theſe depend upon certain inſtruments; *elaſtic fibres*, which compoſe the Canals, and Muſcles: if the Spring of theſe becomes impaired, there muſt enſue ſtagnations, in the capillary veſſels,

ſels, hence diſeaſes. In all machines, the ſprings and moving powers, by reaſon of a change of the matter, of which they conſiſt, muſt become weak; and, at laſt, uſeleſs: ſo fares it with the human frame: the fibres grow hard and criſp; the canals ſtraiter, ſo that the fluids cannot paſs. This is the nature, and round of things, nor can it be kept off by art; yet, certain it is, that few live out the number of their days: intemperance, ignorance, and accidents, ſhorten our lives; as Lord Bacon well obſerves.

By the laws of *Motion*; there muſt be a connection between the agent, and the patient, to produce the effect: if there happen inveterate obſtructions; large diſcharges in the cavities; and, actual putrefactions: what can medicines do? Is there ſuch a thing in nature as a real ſpecific? *Bark* is ſo called, in intermitting fevers: ſo is *Mercury*, in Venereal Diſorders: *Opium*, in violent pain. Theſe, well employed, often do great things; but they are, by no means, equal to their praiſes.

Distempers, bearing the ſame name, proceed from different cauſes; different alſo are the ſymptoms: bodies differ in their conſtitution: Remedies act according to the manner in which the body receives them. He, who has thoroughly ſtudied the art, is often puzzled; he who, indiſcriminately, preſcribes the ſame medicine, carries about him the infallible mark of a quack.

Having thus premiſed; we may aſſert, "that Water is a medicine ſuited to all "perſons. That there is no ſuch preſerva-"tive. That it is ſerviceable in *acute*, as "well as *chronical*-diſeaſes."

By its moiſture, thinneſs, and rarefaction, it diſſolves thick and viſcid humours; it dilutes acrid ſalts; opens obſtructions, and promotes ſecretion. All which it performs as a *ſimple fluid*; its ingredients, ſerve only to quicken or ſtimulate the vehicle.

Water-drinkers, are generally healthier than Beer-drinkers. Water is the moſt proper menſtruum for diſſolving the aliment; extracting the Chyle; and carrying it through the circulation. It diſſolves that viſcous ſlime, which lines the glandular coat of the ſtomach, and inteſtines; whereby the *Gaſtric Juices*, are enabled better to *digeſt* the food.

In ſouthern climates, Water is the moſt common beverage; their inhabitants have whiter and ſounder teeth; nor do they know the *Scurvy*.— [illegible]

Thus far by way of *prevention*. We now proceed to ſee, what *Simple Water* will do, in the *Cure* of Diſeaſes.

In Acute Cases (the principal of which are Fevers) the chief intention is, to ſupply the *ſerous* part, as faſt as it flies off: the *Materia Medica*, affords no medicine for this purpoſe, equal to Water duly tempered: Hippocrates, Sydenham, Boerhave, and all their *rational* ſucceſſors, have recommended *Ptiſans*. By theſe alone, more cures have been performed, than by all the lumber of the ſhops: theſe they gave at firſt in ſmall quantities, and often, but towards the criſis, with a liberal hand.

IN CHRONICAL DISEASES, there is generally an obſtruction of the Glands, or a foulneſs of the juices. Waters, which, upon examination, contain little elſe than the *pure element*, have been found remarkably ſucceſsful: of this ſort are numerous ſprings in *Germany*, the Waters of which cure Rheumatiſm, Gout, Scurvy, Hemorhoids, and Suppreſſion of the Menſes. *Riverius*, *Bellonius*, *Sylvaticus*, *Martianus*, and *Avicenna* confirm this truth.

How ſerviceable Medicinal-Waters *hot* and *cold*, have been in the cure of ſuch diſorders, experience daily teſtifies; and that the greateſt part of their virtue, is owing to the pure element, is beyond diſpute.

SOME ſtomachs bear water warm, much better than cold. Were people of *rigid* fibres only, to follow the cuſtom of TEA-DRINKING, many good effects might be produced; obſtructions might be removed, by the penetrating quality of the fluid, added to the ſaponaceous quality of the ſugar, which renders the Water more miſcible with the blood; Acrid ſalts might be diluted; viſcid phlegm might be diſſolved; and the aſtringent quality of the plant might anſwer this good purpoſe, of making the fluid paſs off the ſooner. The ſanguinary, the bilious, the melancholic, might be eaſed.——Children might (by warm Water) be relieved from thoſe acidities, brought on by the curdling of the milk.——Fevers and Inflammations might be prevented in the young; and aches and obſtructions in the old: The belly might be kept ſoluble; The urinary paſſages cleanſed from Gravel, or Calculous-adheſions; and the moſt healthy of all diſcharges, *Inſenſible Perſpiration*, might thus be promoted.

BUT, ſuch is the force of Education; that the Lazy, the Indolent, and Effeminate;

men, as well as women, of weak nerves, and relaxed fibres; indulge themſelves in the immoderate uſe of a *Tipple*, which enervates ſtill more and more: they dread the effect of the TEA, which, (by its *aſtringency*) is calculated for their benefit; they make the infuſion ſo weak, that it anſwers only one deſtructive purpoſe, of *relaxing* the *muſcular* coat of the ſtomach: hence, *indigeſtion*, with all its direful conſequences. The contractile fibres, (by being ſoaked in warm Water) loſe their elaſticity, and the food lies like a load: hence *Sourneſs*, *Flatulency*, *Vapours*, &c.

WERE the ſtomachs of ſuch to be daily refreſhed, with a glaſs or two of light *Spring Water*, acidulated with a preparation of *Vitriol*; an artificial Medicinal Water might be obtained, productive of the beſt purpoſes.

IF *Sipping* hot liquors muſt be the faſhion, have we not Indigenous Plants, whoſe Virtues far exceed the moſt coſtly TEAS?

Choice might be made of ſuch, ſuitable to every Conſtitution.——For Diſeaſes of the lungs; we have a numerous liſt of *Pectorals*.——We have *Ground Ivy*, in diſorders of the *Kidneys*.——*Buck Bean*, in the *Scurvy*.——And *Valerian* in *weak Nerves*. ——Theſe, and ſuch as theſe, might be, more uſeful than more coſtly preparations; and, were we but told that they came from *India*, the difference of flavour, would ſoon be diſpenſed with.

In *Decoctions*, the Virtues of the Ingredients are too much exhaled.——In *Infuſions*, the Aromatic Virtues are all, as it were, concentrated and received by the Olfactory Nerves, as well as the Stomach. One caution, in Infuſions, may be neceſſary: The water ought to be poured on the plant, juſt as it begins to boil; if the æthereal *Spirit* is to be ſaved.

To ſum up all—In whatever caſes there is a neceſſity of *altering*, *evacuating*, *opening* or *reſolving*, WATER is the *Grand Specific.*

## THE VITRIOLIC ACID.

THE PYRITES, or *Vitriol Stone*, owes its origin to the acid of common ſulphur, which is the univerſal acid; it abounds in the bowels of the earth, it cleaves to almoſt every Mineral, and is to be found in great plenty, in all the neighbouring hills; from this *Pyrite*, the acid exhalation is continually breathing up, and mixes with the Waters.

" FROM this PRINCIPLE of the *Volatile Vitriolic Acid*, united and incorporated with the *pure element* it is, that I may venture to account for the chief, I had almoſt ſaid, the ſole effects of *Briſtol Water*. For, in all thoſe diſorders, in which theſe Waters are accounted *Specific*, there is either a manifeſt, or a latent fever: whether this fever, or feveriſh heat was the original cauſe, or conſequence, it avails but little. One thing is certain, that thoſe *Colliquative diſ-*

*charges* of *Sweat*, *Urine*, and *Fluxes* of all kinds, are upheld and fomented by this latent fever; the blood, by its *velocity*, and *heat* becomes *acrid*, and unfit for the nouriſhment of the body; it expends itſelf in unnatural ſecretions.

" As ſoon as this *feveriſh heat* is ſubdued, the blood acquires its priſtine balſamic nutrient qualities; the *Chyle* is, properly aſſimilated, the body recovers its wonted vigour and alacrity, and becomes fit for all the animal functions. And thus, in accompliſhing this great and ſalutary purpoſe, we may venture to pronounce, that Briſtol Waters are ſuperior to medicines of all ſorts, and equalled by no Medicinal Waters hitherto diſcovered."

## THE MARINE ACID.

By the eighteenth experiment, I have ſhewn, that a ſolution of the *ſalt*, found in the reſiduum, anſwers to the characteriſtics of common *Sea Salt*; as alſo by its crackling in the fire, and by turning *Aqua Fortis* into *Aqua Regia*.

HENCE we may account for the virtues of theſe Waters, in cleanſing the ſtomach and inteſtines of tough viſcid humours; in promoting digeſtion, and correcting ſuch crudities and flatulencies, as produce Spaſmodic diſorders.——When, beſides, the Vitriolic and Marine Acids become blended together in the vehicle of the fluid, they remarkably reſiſt putrefaction, and ſubdue thoſe fevers which are the conſequence of Pus abſorbed and carried through the *circulation*; as alſo thoſe brought on by *inanition*, the conſequence of which is *putreſcency*; agreeable to that axiom, "*Qui fame moriuntur, febre moriuntur.*"

## THE ABSORBENT EARTH.

BY the fifteenth Experiment, it appears, that from five ſcruples of this Reſiduum, digeſted in a *Sand heat*, with diſtilled Rain-water; there remained unſiftred a white Earthy Subſtance, weighing 56 Grains;

which, upon examination, was found to be a *Simple Calcarious Earth*.

THIS *Principle* renders the Waters ſafe, and wholeſome; makes them fit to be drank as a common *Beverage*. This gives them a property of correcting Acidities in the firſt paſſages; hence, may we, in part, account for thoſe Cures, which they daily perform in obſtinate Fluxes, Gleets, and Female Weakneſſes.

FROM the preceding *Experiments*, it muſt appear, that the Component parts of this medicated Water are,

Firſt, THE univerſal ſolvent *Water*, the baſis of the whole Fluid.

Secondly, THIS *Water* is, by a *Pyrite*, impregnated with the univerſal acid, in a ſubtile, volatilized ſtate, readily flying off.

Thirdly, THIS acid renders the Water a fit ſolvent for ſuch ſoluble bodies, as it meets with, in its paſſage.

WE have already conſidered the component parts, ſeparately; and have eſtimated their virtues: but the qualities of the compoſition are not to be deduced from detached individuals, but from the *one great whole* that reſults from the union of the particulars. And this I propoſe to conſider, in the next chapter, which treats of thoſe diſeaſes, in which Briſtol Water is accounted ſpecific.

To ſum up the whole, much may be due to the *Water*, as a ſimple *Fluid*; ſomething to its *Temperature*, ſomething to the *Salts*, ſomething to its *earth*; but moſt of all, to the *Subtile Mineral Acid Spirit*.

# THE Virtues of Briſtol Water, IN THE CURE of DISEASES IN GENERAL.

## CHAP. VI.

MEDICINAL WATERS have this in common, with other Medicines, that their good effects depend upon a proper adminiſtration; and this requires a knowledge of the *Patient*, of the *Diſtemper*, and of the *Waters*. We need not wonder, that he, who is ignorant of either of theſe particulars, ſhould miſs his aim. Is there any reaſon, that the *Waters* ſhould loſe their character, becauſe the Phyſician is ignorant? Or, becauſe they cannot reſtore loſs of ſubſtance, lungs ulcerated and conſumed, juices totally waſted, and limbs enervated by inveterate Ailments?——Should Briſtol Water loſe its credit, becauſe it has not the Power of raiſing from the dead, and regenerating, as it were, Spectres, who may be ſaid to breathe rather than live; who undertake long and painful journies, for no other purpoſe than to ſee St. VINCENT's ROCK, and be returned in a *Hearſe* to their Family Vaults?

THESE Waters ſeldom fail of ſucceſs where the diſeaſe is curable, where the phyſician knows to apply them properly, and where the patient does juſtice to himſelf. What medicine does the Materia Medica afford, more ſafe than ſalts? What ſo mild, as a ſubtile, pleaſant, ſpirituous fluid? When they *purge*, they occaſion no loſs of ſtrength, no ſickneſs. When they paſs by *Urine*, they bring on no ſtrangury or ſharpneſs, but paſs off, with a degree of pleaſure. When they promote *ſweating*, they occaſion no faintneſs. Perſons of all ages, as well as ſexes, have ſafely, and ſucceſsfully drank theſe waters.

FROM falſe and theoretical notions, abſurd and pernicious doctrines, have ſpread, concerning the uſe of Mineral Waters in general. Phyſicians themſelves have run into great errors: there are many who paſs their opinions upon hearſay, or illgrounded analogy; they fancy noxious ingredients in Waters, and, boldly venture to declare them violent remedies: the authority of men, *fortunate* or *eminent* in their profeſſion, ſanctifies opinions however grounded.

THUS Dr. MEAD, who was, indeed, the ornament, as well as patron of that ſcience which he profeſſed; in his *Monita et Precepta Medica*, roundly affirms, *That hot-bathing is hurtful to all paralyticks*;——— "Immerſiones calidæ paralyticis omnibus "nocent" are his own words. This gentleman well knew, that the effects of *warm Water* ſimply conſidered, is to *relax*; hence he accuſes bathing in general. He knew not the ſubſtances which compoſe Bath Water, its *acid*, its *iron*, and its *earth*; elſe he would have pronounced a Water, ſo compounded, the beſt of *bracers* or aſtringents, and recommended it, as highly proper in all relaxations of the ſolids. His pre-poſſeſſion made him paſs over what he well knew, viz. that *palſies* are, generally the conſequences of previous obſtructions in the blood veſſels. In ſuch a caſe, he would have allowed that Waters ſo volatile, and penetrating, bade fair for removing obſtructions, by means of that *temporary* fever raiſed by *bathing*, and drinking warm Water in the act of bathing: ſuch an artificial neceſſary fever reſolves obſtructions, and, at the ſame time, expels the peccant humours by the proper emunctories: The volatile, elaſtic, æthereal particles, enter with the fluid through the pores of the ſkin; they become a fomentature to every veſſel and fibre, by which their diameters are enlarged, and the contained fluid moves in a greater ſpace, and thus is attenuated. In this light, warm-bathing, may be juſtly accounted a *Deobſtruent:* whilſt the waters (charged as they are) muſt act *externally* as bracers of the ſolids and conſtringers of the pores.

Dr. SUMMERS a late Phyſician of *Bath*, juſtly apprehending that the *ſentence* pronounced on the Waters, by ſo great a man, might gain ſuch influence on the minds of deſpairing cripples, as to deter them from purſuing a method known to be uſeful; with candour and due reſpect publiſhed a confutation of Dr. MEAD's aſſertion.——
" He reſts the whole force upon arguments,
" which neither prejudice nor intereſt can
" be ſuppoſed to produce, *The Regiſter of*
" *the General Infirmary at* Bath."

HE examines the books for nine years

back, and finds the account of *paralyticks* as follows:

ADMITTED in nine years 310. Cured 57. Much better 151. No better 45. Incurable 42. Dead 12. Remain in the houſe 3.

ALL theſe bathed twice a week, and many thrice. Of thoſe who were cured, or diſcharged as *much* better; thirty were 40 years old; fifteen were turned of 50, and five were 60 and upwards. Theſe live under many diſadvantages unfelt by perſons of fortune. They come, beſides, as incurables from other hoſpitals. Among the 310, there were 43 *Hemeplegias*, a ſpecies ſeldom curable by medicine. Of theſe, the ſtate ſtood thus:—

CURED 4. Much better 13. Better 14. No better 2. Incurable 4. Improper 3. Dead 3.

Dr. MEAD had declared, that he knew ſome, who, after *bathing*, died *apoplectic*.

Paralytics, it is true, often die in this manner, eſpecially if the diſorder, originally began in the head; the palſy often brings on an apoplexy, and the apoplexy ends in a palſy. This, doubtleſs, encreaſed the doctor's fears; but, what makes greatly to our purpoſe, is that not one of the *twelve* who died, became *apoplectic*, nor was one of them ſeized with a fit in the Bath, or immediately afterwards; though they ſtay in, often an hour or ſometimes longer, and continue in the hoſpital ſometimes for 12 months.

IF *bathing* produced ſuch dangerous effects, what would become of our guides, who continue in the Bath for two or three hours every day; and yet are known to be healthy and long-lived?——Amongſt Dr. GUIDOT's 200 caſes, there are 23 paralytics, 17 of which were cured, four of which were *Hemiplegias*, and the other ſix were much better by bathing.——Dr. *Summers* dedicates his pamphlet to the Governors of the Bath Infirmary, there he tells them,

" That this undertaking was intended to " aſcertain the *nature* and *efficacy* of the " Bath Waters, that the *rich* may be en- " couraged to partake of a bleſſing which " they have given to the *poor*. The public " has a right to be informed, how far their " noble intentions have been anſwered, " and what good their benevolence has " produced."——The Gentleman, who ſpeaks thus freely to the Governors, was a worthy Phyſician of that Infirmary, and, yet, he ſtands by himſelf in this reſpect, for, excepting theſe *Paralytic Caſes*, the public has not been favoured with one from that hoſpital in fifteen years, and theſe are recorded in a manner, as if the experience was the property of the Attendant Phyſician only.

" A LADY who now lives in Golden- " ſquare, had a conſtant vomiting for a " month; with racking pain, about the " region of the ſtomach; her brother-in- " law, read his wife's letter to me, de- " ſcribing her caſe: I ſuſpected that her

“ diſorder, was owing to *biliary concretions,*
“ ſome of which were then, actually paſ-
“ ſing through the duct: I told him, that,
“ if ſhe could be tranſported to Bath, ſhe
“ would find a certain cure; this was re-
“ lated to an eminent Phyſician then at-
“ tending, who roundly pronounced Bath
“ Waters pernicious, in all reſpects; expe-
“ rience induced me to adhere to my firſt
“ prognoſtic: ſhe was, with great difficul-
“ ty, brought down to Bath, her pain was
“ exquiſite, ſhe threw up even Laudanum
“ itſelf: I had her lodged in a houſe, near
“ the Queen's-Bath, from whence there
“ was a communication or *Slip*. I adviſed
“ her to drink a glaſs of Water at any
“ time, and as faſt as ſhe threw that up,
“ another. She was put into the Bath
“ ſometimes twice in a morning, and there
“ kept as long as her ſtrength could bear
“ it. In a few days, the water began to
“ ſtay on her ſtomach: ſhe paſſed by ſtool,
“ at one time, twenty-two gall-ſtones, and
“ more at different times: her pain ceaſed

" and, in leſs than three weeks, from a " ſkeleton, ſhe grew plump, and walked " abroad. She made uſe of no other medicine but an occaſional *deobſtruent purge* " of Rhubarb, Rad. Curcum. Rub Tinctor, &c. with *Caſtile Soap* daily.

" She went home; her complaints returned; ſhe ſoon came down again to " Bath, where ſhe followed the ſame regimen, and found the ſame cure, but " choſe to ſtay for ſix months; ſhe drank " about a quart of Water every day, and " ſwallowed upwards of two pounds of " ſoap every week; ſhe now enjoys good " health, after four years perſiſting in the " uſe of the ſoap, and Bath Water warmed " at home."

" The cauſe of falſe judgment, and " different opinions among men, is (according to Dr. Oliver in his judicious " treatiſe on *warm bathing* in *gouty caſes*) " that facts are ſeldom truly repreſented; " circumſtances are added or omitted.—

“ A gouty perſon bathes, and is hurt by “ bathing; the fact is related to a phyſician at a diſtance, he concludes, *That* “ *bathing in gouty caſes, is wrong.* The “ Phyſician on the ſpot ſaw this perſon bathe, he obſerved that he was in a “ very unfit ſtate, that he went in without due preparation, that he ſtaid in too “ long, that he continued a diet very improper. All that the laſt concludes is, “ *That improper bathing is a dangerous thing.* “ He ſtill holds his opinion, That bathing, “ in gouty caſes is a right thing: but theſe “ two doctors muſt differ, till he who lives “ at a diſtance, is informed of the circumſtances of the fact.

“ SICK people who come to bathe for the “ Gout, or to drink or bathe at this, or any “ other Mineral Water Place, believe that “ they come for the uſe of the Waters only. They look upon the ſlighteſt prepation as loſs of time, they grow impatient, they plunge into Baths *improperly*,

“ they hearken to every idle tale. Men of “ groſs habits, and unſound viſcera; and “ others emaciated, weakened, and diſpirited, worn down by hectics, and colliquative diſcharges, ſtand in need of the “ full exerciſe of their reaſon, if they put “ any value on health or life.

Dr. JAMES, in the introduction to his *Pharmacopedia Univerſalis*, ſays,—“ Cuſtom and the Legiſlature, in imitation of “ all civilized nations, have wiſely provided for the intereſt and health of the ſubject, by aſſigning to diſtinct bodies of “ men, their different provinces in phyſic; “ both becauſe each branch is ſufficient, to “ engroſs the whole attention of any one “ man, and becauſe every diviſion is a ſort “ of check upon the other, ſo as to guard “ againſt the effects of avarice and artifice.

“ THUS, the *Druggiſt* is reſtrained from “ providing bad materials, by the knowledge of the *Apothecary* who is to purchaſe them.

" AND, as an encouragement to induſtry " and integrity, the *Apothecary* is indulg- " ed in ſeveral privileges denied to other " callings; cuſtom has, beſides, allowed " them extraordinary profits. But leſt " theſe indulgences, ſhould defeat the end " for which they were intended, it was " prudently provided, that the vender of " medicines ſhould not have the direction " of their uſe, leſt private advantage, ſhould " influence him to load his patient with " medicines, to the ruin of his health and " fortune.

" THIS truſt therefore, is entirely repo- " ſed in the Phyſician, who is ſuppoſed " to have the advantage of a generous and " liberal education, which, naturally, in- " fluences the morals, and biaſſes men leſs " to gain, than thoſe who are bred to me- " chanical profeſſions. But, as all men " are frail, he is juſtly reſtrained from vend- " ing the medicines which he preſcribes.

" FROM conſiderations no leſs prudent, " have civilized nations divided *Surgery*

“ from *Phyſic*, and aſſigned to the *Surgeon*
“ the executive part in all external diſorders; reſerving, mean while, to the Phyſician, the province of directing internally; thus the patient is better ſecured againſt error and avarice.

“ In the ſituation of *Phyſic*, as it now ſtands in *England*, diſtinctions are confounded and deſtroyed; and perhaps, no abuſe challenges more the interpoſition of the Legiſlature. The *Chymiſt* compliments his cuſtomers, with the refuſe of drugs: And the *Druggiſt*, by way of retalliation, furniſhes his with chymicals equally bad. The Apothecary commences a moſt contemptible Surgeon. The *Surgeon* profeſſes *Pharmacy*, with the ſame degree of knowledge and ſucceſs: And both (in ſpite of *reaſon* or *education*) are by a kind of Magic, peculiar to themſelves, converted into moſt execrable doctors. It now only remains, that Phyſicians ſhould become very bad Apothecaries, and then

"may we expect to ſee medicine practiſ-
"ed with leſs ſafety, than among the ſa-
"vages of *America*.

"I SOLEMNLY declare, that I now plead
"as a member of ſociety, private intereſt
"has with me no ſway; I am convinced,
"that the preſent confuſion of Phyſic, im-
"poſes a tax on the public in favour of
"Phyſicians, to the amount of many thou-
"ſands of pounds annually.

"ACUTE diſtempers are eaſily cured,
"while ſtrength remains to co-operate
"with medicines; but, when time has
"been loſt, by truſting to men who know
"only to fawn and trifle; when nature
"has been diſturbed, by purging off hu-
"mours unconcocted; when ſweats have
"been forced by unſeaſonable cordials;
"when the diſeaſe has been weakened, by
"the unſeaſonable uſe of the lancet; the
"conſtitution becomes injured ſo much,
"as to require ſix times the attendance,
"and the deluded patient has more than

" common good luck, if he eſcapes the " fiery trial, with life; or, at beſt, a " conſtitution ruined for life.

" *So modern 'Pothecaries taught by art*
" *By Doctors bills, to play the Doctors part,*
" *Bold in the practice of miſtaken rules,*
" *Preſcribe, apply, and call their maſters*
" *fools.*"

Says Mr. POPE.

Dr. FRED. HOFFMAN was a Phyſician, a Chymiſt, and a Philoſopher; he was well verſed in every branch of knowledge, the ſubject of which is the *human frame*; his criticiſm may ſerve to convince the reader of the neceſſity of being particular, on a ſubject of the higheſt importance.

" It is to be lamented (ſays this judicious " enquirer) that, of the vaſt number of " Phyſicians, ſo very few ſhould underſtand, " the powers and effects, of the medicines " which they preſcribe. Of this truth, we " have a ſignal inſtance in the buſineſs of " Mineral Waters, which, tho' famous for

" ſo many ages, and recommended by " thouſands of eminent examples, are, nevertheleſs, diſcredited by the ignorance " and unſkilfulneſs of Phyſicians.

" No leſs prepoſterous has been their " manner of preſcribing Waters, which they " do in the perfect manner of *Empiriciſm*; " ſo that Mineral Water Places, ſeem the " principal, and more immediate ſeat of " *Quackery*."——Thus freely has the Doctor expoſtulated with his brethren. What would he have ſaid, had he lived in a country, where Dr. JAMES's complaint held true?——But to proceed.

THE body of man is an organic-machine, conſiſting of Solids and Fluids, ſo combined, as to form an entire Syſtem, capable of producing certain operations called Animal-Functions. For the preſervation of life, there ought to be kept up a due Equilibrium: If the vaſcular fibres become too rigid, the Veſſels will contract with violence, the blood's motion will be encreaſed, the humours will be changed from their natural bland ſtate, into an acrid exalted one; hence Fevers, Hæmhorages, Fluxes, &c.

If, e, c, the force of the Fluids ſurmount the elaſticity of the Solids, the Veſſels will be inlarged, and relaxed; hence ſtagnation, obſtructions, &c.

Dr. Pitcairn has laid it down as a Maxim, that due Secretions from the Blood, are as neceſſary for the preſervation of health, as the circulation itſelf.

The greateſt part of Chronic Disorders, ariſe from one or either of theſe two cauſes. The blood is either too thin, and then it is ſeparated in too great a quantity, by the glands, of the ſkin, guts, or kidneys. Or, it is too viſcous, and thus occaſions obſtructions in the glands, and in its own canals.

The ſurface of the body, as well as its internal cavities, are covered with a tranſpirable membrane, replete with exhaling pores, through which continually and inſenſibly, tranſcends a ſubtile effluvium or vapour; ſo ſmall are theſe pores, that LEWENHOCK computes that 125,000 of them may be covered with a grain of ſand, whoſe diameter is $\frac{1}{100}$ of an inch, and yet ſo numerous, that SANCTORIUS found, that in *Italy*, in a healthy perſon, this ſecretion amounted to $\frac{5}{8}$ of all the ſenſible excretions: KEIL and LISTER compute it in *England*, to be, at leaſt equal to them all put together.

IF the pores happen to be obſtructed, the ſkin grows dry, the veſſels become impermeable, the humours regorge; thus there ariſes a Plethora, as well as an Acrimony; nature is obliged to eaſe herſelf of her load by the increaſe of ſome of the ſenſible Evacuations; hence Vomitings, Fluxes, Hæmhorages, pale Urine, &c.

THE primary Indication in the cure of chronical diſtempers, is to render the circulation free and eaſy.

For the attaining this purpoſe, four things ſeem neceſſary.

First, To reſolve the impacted humours.

Secondly, To correct the degenerated ſtate of the blood.

Thirdly, To expel the peccant matter.

Fourthly, To relax the too rigid, and ſtrengthen the relaxed fibres.

All which require ſkill and judgment. We have already conſidered the different ingredients which conſtitute Briſtol Water, and have enumerated their virtues ſeparately and collectively.

From this general idea it cannot be hard to conceive after what manner Briſtol Water acts in the cure of diſtempers.

By its tepid ſubtle *Fluid*, it reſolves, rarefies, quickens and enlivens the drooping circulation, it removes all criſpations of the ſolids, and reſtrains the rapidity of the blood, corrects acrimony, cleanſes the ſtomach and inteſtines, and corrects foul and viſcid juices; thus it reſtores appetite and digeſtion. And when it gets into the circulation, it diffuſes itſelf thro' the whole habit, and reaches to the moſt minute capillary veſſels.

In this, and the preceding Chapter, I have accounted for the *Modus Operandi* of Briſtol Water, in ſuch a manner, as will, I hope, abundantly ſatisfy the phyſical reader, who, by living at a diſtance, has not the opportunity of ſatisfying himſelf by experiments; I pretend not to inſtruct Phyſicians in any other ſenſe.

To inform Patients, of what belongs to their own intereſt; I have premiſed a ſhort, and plain account of the Animal-œconomy, I have ſlightly touched at thoſe cauſes of error, which ſeduce the unwary. I proceed to point out the virtues of Briſtol Water in thoſe particular diſorders, in which it is ſaid to act *ſpecifically*.

# THE

# Virtues of Briſtol Water,

# IN

# PARTICULAR DISEASES

## CHAP. VII.

WHEN the reader has duly conſidered the cauſes of error and uncertainty mentioned in the laſt chapter, he will hardly expect to ſee rules laid down for the drinking of theſe waters, which can ſuit every conſtitution, diſeaſe, age, or ſex. Phyſicians reaſon differently, according to the difference of their judgment, ſagacity or education. The art of phyſic is, at beſt, but uncertain. The ignorant cure ſometimes, tho' they know not how. The rational practitioner proceeds on rational principles; by his practice, he makes it appear, that the virtues of Medicines depend not more upon the remedies themſelves, than upon the diſpoſition of thoſe bodies, on which they are intended to act. When he directs the uſe of Mineral Waters, he knows the neceſſary circumſtances, and particular caſes, in which they may, or may not be ſerviceable, he lays down rules which tend to a certain iſſue. Waters which contain ſalutary particles, contain alſo thoſe that are noxious; life and death are in the hands of him who gives advice; the ſimpleſt noſtrums do miſchief, improperly applied.

"PATIENTS (ſays Dr. *Oliver*) inſtead of
" following the rules laid down for their
" conduct, torment themſelves continually
" with doubts and ſcruples: by hearkening
" to the opinion of every pretender, they
" come to have none of their own to act
" by. They trifle away their whole time

“ in a fruitleſs ſearch after what they
“ ſhould do, inſtead of doing what they
“ ought, till at laſt, finding they receive
“ no benefit, or are worſe than when they
“ came, they condemn the Waters, and
“ quit them in diſguſt.”

HE who expects to find relief at this ſpring, muſt ſubmit to a long courſe of attendance, he muſt arm himſelf with a ſtock of patience and perſeverance. To theſe he muſt join temperance of every kind.

MEATS of all kinds, young and eaſy of digeſtion, are the moſt proper DIET, with *Milk* in all ſhapes: Milk is already elaborated, prepared and digeſted in the body of the animal, it is replete with nutritious particles, and wants little elſe, but the colour to be blood. But, above all, *Butter-Milk* where the febrile-heat predominates: This was ſtrongly recommended in all inflammatory caſes by the Great BOERHAVE; this and *brown bread,* was his own conſtant diet: this every thinking Phyſician muſt ſee the utility of, and yet, in this Kingdom, it becomes the food only of hogs.

FOR drink at meals; I would recommend Briſtol Water brought from the Well, ſome hours before; the bottles ſtanding uncorked, or warmed in a veſſel of hot water, with the bottle alſo uncorked. A little wine may be mixed with it, but no wine is better. The practice of drinking tea twice a day, or even once, is abſurd, it anſwers only one purpoſe, that of rendering the virtues of the Waters leſs effectual.

FEW preparations are neceſſary to the drinking theſe waters; but their virtues are greatly encreaſed by medicines duly adminiſtred.——The Paſſions muſt be kept within bounds, every exceſs exaſperates the diſtemper, and hinders both the firſt and ſecond concoctions.

THE ſanguine, the florid, and the plethoric, may bear Evacuations; while the thin, the pale, and the phlegmatic may be hurt by almoſt any. Purges of the rougher ſort, deſtroy the tone of the ſtomach and bowels, the waters paſs not ſo eaſily, on account of that ſtricture which all purges leave behind them. Where the guts are clogged with a groſs viſcid phlegm, lenient purgatives are neceſſary to open the mouths of the veſſels, and ſo give acceſs to the fluid. MAGNESIA ALBA is much uſed with Waters abroad, eſpecially in coſtive habits; I know no purge ſo natural to theſe Waters as this; its purgative quality ſeems to proceed from its alkaline, earthy matter, diſſolved by the ſharpneſs of the juices, and the remains of the aliment in the firſt paſſages, ſo as to degenerate into a neutral ſalt, which exerts a purging quality, ſimilar to that prepared with the white *Mangane*ſ*e* and *Spirit* of *Vitriol*, on which principle, the common *Ep*ſ*om* ſ*alt* is proved to act.

VOMITS in general ſeem to be a more natural ſort of preparatory evacuation, but theſe muſt be given with caution: where the *viſcera* are unſound, they are often attended with great danger.

BLEEDING may be a neceſſary preparative to thoſe who ſport with the Waters, or drink them, becauſe they would not be out of the faſhion. But in many diſorders in which, this Water is indicated, *bracing* and *ſtrengthening* ſeem to be indicated. In inflammatory fixed pains, or in giddineſs or plethora brought on by the uſe of the Waters, it may however, be neceſſary.

MODERATE EXERCISE, particularly RIDING, greatly facilitates the operation of theſe Waters. The ſea-air alſo refreſhes and ſtrengthens the lungs of all, but more remarkably of thoſe who have been accuſtomed to an Inland-air; but this exerciſe, ſhould, on no account, be protracted beyond the ſtrength of the ſick. In thoſe caſes in which the Water is expected to paſs by Urine, ſitting ſtill, or walking moderately, will better conduce to the purpoſe; becauſe riding promotes other ſecretions;

which, conſequently, diminiſh this.—DANCING is a good exerciſe, provided the lungs are ſound, and no febrile heat.

WE now proceed to thoſe diſeaſes, in which experience has aſcertained the efficacy of theſe Waters. And here, we may obſerve, in general, that whoever has duly attended to what has already been advanced on the virtues of the ſubſtances or principles contained in the Waters, will be as little at a loſs to account for the operation of theſe Waters in particular diſeaſes, as he who underſtands the doctrine of *inflammation*, is to account for the operation of medicines in *Acute diſeaſes*.

## I. DISORDERS *of the* LUNGS.

IN ſimple Inflammations, the common methods of bleeding, bliſtering, &c. ſeaſonably applied, ſeldom fail of ſucceſs. If, in this ſtage of the diſtemper the patient applies to theſe Waters, the feveriſh heat which irritates the lungs, is quickly ſubdued,

dued, the teazing cough, and all the other ſymptoms ceaſe of courſe.

When, by ignorance or neglect, the inflammation comes to degenerate into *Pus*, and forms ulcers, the conſtant motion of the lungs in *Inſpiration* and *Expiration*, together with the *Cough* hinder them from cicatrizing: the Pus, by ſtagnating, acquires an *acrimony*, is abſorbed, and carried into the circulation: thus the whole maſs becomes tainted, the blood is melted down into an ichorous corroding ſerum, which runs off by the lateral veſſel in colliquative diſcharges; a *Hectic Fever* is produced, which encreaſes theſe diſcharges: the body is not only emaciated, but cannot be nouriſhed, as the blood is robbed of its bland balſamic quality: the neighbouring parts partake of the inflammation, till, at laſt, the whole ſubſtance of the lungs comes to be in a flame, and, then melted down into *Pus*, which fills the Bronchia, as well as the cavity of the Thorax.

The lungs are, beſides, ſubject to a *Peripneumonia Notha,* which is a defluxion of viſcid phlegm, compreſſing the aereal, as well as the blood veſſels.

The lungs are covered with an infinitude of glands; when theſe become obſtructed, tubercles are formed, which, encreaſing in ſize, hinder the action of the lungs, and bring on a cough, catarrh, &c.

In a Peripneumonia, where the pulſe is firm, it is a good ſign, it denotes that the circulation is free in the extremities of the Pulmonary Artery.——But when it comes to be what is called *Pulſus undoſus,* it denotes an abſceſs in the lungs.——When the head comes to be affected; as alſo, when the patient complains of loſs of ſight, without any fault in the eyes, *Hippocrates* remarks, that this denotes a tranſlation of matter to the brain, and is, generally fatal.

In a *Peripneumonia,* contrary to inflammations in all other caſes, the worſe the diſeaſe, the weaker the pulſe; the reaſon is, that there is a greater obſtruction of the Pulmonary Artery, the paſſage from the right to the left Ventricle is obſtructed, and though the heart contracts as uſual, the ſame quantity of blood is not ſent through the body.

WHEN temperance, regimen and art have been all three baffled; when Patients have been reduced to the moſt deplorable ſtate; when conſuming heats, and colliquative Sweats have reduced the Body to the ſhadow of a Man: Briſtol Water has (by its *fluid* and *volatile Acid)* ſubdued that FEVER which nouriſhed the Diſeaſe, as well as corrected that putreſcency which vitiated the Blood. Its penetrating and deobſtruent *Salts* have diſſolved that viſcid *mucus* which choaked the *aereal* Veſſels, and reduced thoſe Tubercles, which by their unnatural increaſe, impeded the action of the Lungs.

IN a *Phthiſis Pulmonica* proceeding from the latter, Crude-Mercury, expectorating and attenuant Gums, in doſes too ſmall to purge, with diuretic Balſams and Aſſes milk, have greatly promoted the efficacy of the Waters.—The EARTH, by its abſorbent quality, has corrected that acrid humour which vellicates the nervous coat of the Inteſtines, and has ſafely ſtopped colliquative fluxes, whilſt *Opiates* and *Aſtringents* exerting their power upon the Lungs, as well as upon the Inteſtines, have ſtopped expectoration and endangered ſuffocation. The Waters thus aſſiſted have filled the Veſſels, with their native, benign, balſamic liquor, and freſh luſtre, has again ſparkled in the Eyes.—Many examples might be produced in proof of this aſſertion, let one ſuffice, which is ſtill freſh in the memory of moſt people at the Wells.—" From the " dregs of the *Small-Pox*, Miſs L. a young " Lady of *Birmingham*, was attacked with " a Conſumption of the very worſt ſort, " ſhe came to this place in February, quite " emaciated, with profuſe Sweats, and

“ other colliquative diſcharges: there was “ emptied, every morning, almoſt a baſon “ full of matter of an intolerable ſtench, “ ſhe drank the Water for ſix weeks with- “ out the leaſt viſible amendment; after “ this ſhe recovered daily, ſo that at the “ end of the ſecond ſix weeks, ſhe was per- “ fectly recovered, excepting a dry teazing “ Cough, which, yielded to little bleed- “ ings; the Water however, ſeemed rather “ to increaſe this remaining ſymptom. I “ adviſed her to return to her home, recom- “ mending two or three glaſſes of Spring “ Water, acidulated with *Elixir-Vitriol*, to “ be drank every day, and Butter-milk with “ Riding; which under the judicious care “ of her Phyſician, Dr. *Aſh* will (I hope) “ avert a relapſe.”

OUGHT we not to ſet the higheſt value then upon a remedy, ſo eaſy, and ſo effectual in a country where CONSUMPTIONS may be ſaid to be almoſt *Endemical?*—— Irregularities, Infection, tranſlation of morbific matter, mal-conformation of the parts, &c. often produce this Diſeaſe. But the moſt common of all cauſes is COLD.—*Frigus genitor eſt Pthiſeos pulmonalis, ſulicet venulis a frigore conſtructis & convulſis,* ſays HIPPOCRATES.———*Frigida pectori ſunt inimica, tuſſes movent, catarrh excitant.* Id. Aph. xxiv. Sect. 5. *Cold* is the ſource of thoſe conſumptive pulmonary complaints, which carry off multitudes daily: to which the inhabitants of this iſland are daily expoſed, on account of the inconſtancy of the weather, and the uncertain viciſſitudes of the ſeaſons. Agreeable to this is that Aphoriſm of SANCTORIUS, "*Cauſæ externæ quæ prohibere ſolent perſpirationem,* "*ſunt Aer frigidus, cænoſus, humidus,* "*&c.*"

THE inſide of the wind-pipe and lungs, is lined with a perſpirable membrane expoſed to the external air, through this there exhales continually, a ſubtile vapour, ſeparated from the blood. SANCTORIUS, by collecting the drops on a mirrour, found the quantity exhaled by reſpiration, to amount to half a pound in one day. LISTER thinks the calculation too low, he computes it at one fifth of the whole, *i. e.* near a pound: No wonder then, that when the mouths of theſe exhaling veſſels are, by the ſudden application of an intenſe COLD conſtricted, the perſpirable matter is fixed, condenſed, and converted into pituitous phlegm, cauſing inflammations, fever, &c.

MEDICINES duly adminiſtred, have often kept the Waters in the right path, when they would have ſtrayed; they have, often, claimed a due ſhare of the prize: mild balſamics have blunted the acrimony of the fluids: Aſſes-milk has, attenuated and nouriſhed, whilſt butter-milk, by its *acidity*, has ſubdued the putreſcency of the Juices, and acted as an excellent febrifuge, keeping the belly, at the ſame time, open; a happy circumſtance in a conſuming hectic.

ISSUES have been of ſingular uſe in fixed pains, and inflammations; their perpetual drain not only relieves the part affected, but alſo carries off a part of that acrimonious humour which vitiates the fluids: they have reſtored emaciated limbs to their priſtine ſtrength and ſize, and plumped up bodies enervated and waſted by colliquative diſcharges.

SETONS, in diſorders of this kind, I would prefer to all the reſt: and here, experience vouches the doctrine ſo fully, that the following caſes may not be impertinent.

“ Mr. H. of *Marlborough*, of a fair com-
“ plexion, and delicate habit of body,
“ much ſubject to hectic heats, &c. threw
“ up from his *lungs*, at different times,
“ matter to the quantity of ſeveral quarts;
“ the ſymptoms of a freſh abſceſs were
“ familiar to him, and then it was that I
“ firſt viſited him: he had taken variety
“ of pectoral medicines, and lived always
“ temperately: I adviſed him to put a Se-
“ ton

“ ton between the ribs, juſt above the in-
“ ſertion of the Diaphragm, and near the
“ part where he felt the pain. His ſymp-
“ toms vaniſhed, he has enjoyed perfect
“ health now for nine years, and his con-
“ ſtitution is much altered for the better.”

“ Mr. B. a working Silver-ſmith of
“ *Covent-Garden*, came down to *Briſtol*,
“ much emaciated by an eructation of pure
“ blood from his lungs, which had con-
“ tinued, at different times for ten years,
“ and rendered him incapable of purſuing
“ his calling. By my advice, a Seton was
“ put in his ſide, which, without the aſ-
“ ſiſtance of the Waters, or any other me-
“ dicine, recovered him to ſuch a degree,
“ that ever ſince (and now four years are
“ elapſed) he has not loſt one day’s labour,
“ and has become fat and ſtrong.”——He
has ſuch faith in his cure, that as ſoon as
the Seton cuts through the ſkin, he has a
freſh one put in.

SEA-VOYAGES have performed wonders

in conſumptions: whoever reads Dr. GILCHRIST's accurate collection of hiſtories of this ſort, will no longer doubt the fact.— It is notorious, that young lads of delicate puny conſtitutions, grow ſtrong and hardy, by being at ſea.—Men have left *England*, with all the ſymptoms of a phthiſis, they have recovered on their paſſage to the *Weſt-Indies*, living, mean-while on the ſhip's proviſions, and doing the duty of private men. Something, doubtleſs, was due to the exchange of an inconſtant climate, for one where reigns an eternal warmth and ſerenity.

## II. HÆMORHAGES of all Kinds.

IN a HÆMOPTOE or Eructation of pure blood from the lungs, the juices acquire an acrimony from *Inanition*, the blood being robbed of its balſamic parts. If this continues, a putrid Hectic-fever is the conſequence. Thus, in Monaſteries, the *Religious* who obſerve a ſtrict abſtinence, die of fevers; the juices, for want of freſh chyle, acquire a putreſcency, which corrupts their breath, and circulating in the capillary veſſels of the brain, turns them mad. Thus it fares with women who give ſuck, if they faſt too long, their milk taſtes ſtrongly of urine. This alſo, is the reaſon, why ſick people are generally peeviſh.

In a Hæmoptoe, a part of the blood remains behind in the Bronchia, or aereal veſſels: by ſtagnating, it naturally acquires a putreſcency, it becomes ichorous and thin, it enters the mouths of the abſorbent veſſels, and ſo is carried into the circulation, where it infects the blood; theſe preludes generally end in a conſumption.

By the difficulty of breathing, by ſhiverings, &c. we pronounce an impoſtumation.

If this diſtemper is taken in time, Briſtol-Water with repeated veneſection, reſt, and a cooling diet bids fair for a cure. The Waters (as we have ſhewn at large) have a ſpecific quality in ſubduing the febrile heat, and leſſening the momentum of the blood; the ruptured veſſels have time to cicatrize, and a cure is often found.

HÆMOPTOES are frequent among women, nor are they ſo alarming: they generally proceed from an obſtruction of the menſes. The cure is performed by preſcribing *Emenagogues* about the time of the next eruption; if this ſucceeds, the diſeaſe vaniſhes.

IN immoderate fluxes of the MENSES, a Hectic-fever neceſſarily ſupervenes, hence loſs of ſtrength and appetite, paleneſs, and ſwelling of the ankles. The cure is performed by the *volatile acid* and *abſorbent earth* wonderfully blended together in the *ſubtile fluid.*

IN the HÆMORRHOIDS or PILES; in HÆMORHAGES of the URINARY PASSAGES, as well as DYSENTARIES or BLOODY FLUXES, the Waters act as before related.

## III. DIABETES.

ARÆTEUS was the firſt who gave any tolerable deſcription of this diſeaſe. He calls it, "A flux of humours from the "veins, a colliquation of blood, and con-"tinual effuſion by the kidneys and "bladder."

ITS ſymptoms are, a copious and frequent excretion of a pale-coloured taſteleſs urine, frothy and white ſpittle, parchedneſs of the mouth and throat, feveriſh heat, anxiety and inquietude, waſting or atrophy, a fulneſs about the loins with an irreſiſtible deſire of making water, great thirſt; the Water in time becomes ſweeter, with an ardent fever, delirium and death. Theſe ſymptoms vary according to the cauſe, or violence of the diſeaſe.

THE cauſes are, whatever *relaxes* or weakens the *urinary veſſels*, or diſſolves the *craſis* of the blood. WILLIS mentions one contracted by drinking Rheniſh wine too freely. LISTER another, from the too plentiful uſe of Knareſborough water, as alſo another from the too free uſe of balſam of Capivi. Large and ſudden evacuations, lingering diſtempers, low diet, exceſs of Venery, immoderate uſe of punch, the ſtoppage of other ſecretions, eſpecially *inſenſible perſpiration*, which occaſions a temporary Diabetes in Hyſterical Women and Hypochondriacal Men. Whatever, in a word, deſtroys the equilibrium between the ſolids and the fluids.

THE humour diſcharged in a Diabetes, differs from urine in its colour, taſte, and ſmell. It ſeems to be an afflux of Chyle little altered by circulation. "The urine "of a perſon labouring under a Diabetes, "coagulated into a glewy maſs, like the "white of an egg, or the ſerum of the "blood before the half was evaporated over "a ſlow fire.——The ſame quantity of "the urine of a perſon in health, evapo"rated almoſt entirely, leaving only a little "fetid ſediment behind." Dr. KEIL made the experiment.

THE Diabetes is tedious in the cure, and often fatal, becauſe the Patient does not ſoon diſcover his diſorder. The cure muſt be adapted to the cauſe.——— "About ten "years ago, I cured a Tobacconiſt of the "*Devizes* of one of long ſtanding, and the "worſt ſymptoms, with one preſcription of "a Decoction of Bark, Rhubarb, &c."-- Others leſs alarming have reſiſted the power of Medicine as well as Briſtol Water.

THE Indications of cure, are

Firſt, to avert the flux of humours from the Kidneys.

Secondly, to remove thoſe obſtructions, which impede the other ſecretions.

Thirdly, to ſtrengthen the Renal-veſſels, as well as the whole ſyſtem.

DR. HARRIS called a Diabetes, a Diarhea of the Kidneys, and indeed, theſe diſeaſes greatly coincide in their cauſes, effects and cure.—HIPPOCRATES ſays, *Cutis raritas, alvi denſitas, & vice verſa,* this may be as well applied to the Diabetes as to Fluxes of the belly. HIPPOCRATES, CELSUS, and Dr. FRIEND obſerve, that by Vomits, the cuticular pores are opened, and ſuperfluities diſcharged: *Ipicacuana* is the beſt. Rhubarb immediately tinges the urine, and is a Corroborant. Diaphoretics, dry rubbing, moderate Exerciſe, and Cold-bathing may be uſeful as they are indicated. Without a good *digeſtion*, there can be no good blood, and without good blood, there can be no ſound nouriſhment, nor any cure of a Diabetes.

AMONG all the remedies deviſed for the cure of this diſorder, none bids ſo fair for the name of a *Specific* as Briſtol Water. How it accompliſhes this great work, we are now to enquire.

THE volatile ethereal elaſtic SPIRIT diffuſes itſelf, like electrical fire, thro' the whole body, it opens obſtructions, dilates the ſmalleſt Veſſels, and diſpoſes them for the reception of their proper fluids, it promotes inſenſible perſpiration, and thus averts that unnatural flux to the kidneys.

The SALTS diſſolve viſcid coheſions, and ſtimulate the Solids, and thus enable them to throw off the peccant humours by their proper Emunctories.

The ABSORBENT EARTH is endued with a drying, bracing and corroborating quality; when it comes to paſs by the ſecretory veſſels of the kidneys, it ſtrengthens their relaxed fibres, contracts their patulous orifices, and thus fits them for the reception of thoſe Juices only, which nature wiſely ordained for that excretion.

BUT, above all, the VOLATILE-VITRIOLIC-ACID, incorporating with the *ſubtle penetrating Element*, mutually co-operate in ſubduing that Hydra the *Fever*, which conſumes the body, and expends its nouriſhment in unnatural Secretions; this point once attained, Thirſt, Anxiety, Waſting and Debility follow in its train; the Secretions all recover their proper Outlets, the Chyle is duly aſſimulated, the blood acquires its wonted nutrient property, and the body becomes again fit for performing all its functions.

WHEN, I ſay, the ſubtility of the *ſpirit*, the penetrancy of the *ſalts*, the reſtringency of the *earth*, and the anti-putreſcency of the *acid*, come all to be blended together, by the wiſe Chymiſtry of nature, in a warm ſoft, and ſubtle *ſluid*, they, thus united, exert a force incomprehenſible to our poor reſearches. Briſtol water has this peculiar quality in this diſeaſe, that let it be drank in any quantity, it promotes not that unproportionable diſcharge, which all other liquors do. Happy tidings to the deſponding patent, whoſe tongue is parched with thirſt unquenchable!

## IV. GRAVEL and STONE.

As a Dieuretic, theſe waters act ſpecifically and naturally; they correct acrimony: They disjoin and waſh away gravel where it is accumulating, they alſo prevent its reſuſcitation, by ſtrengthening the Urinary-

paſſages: they enable them to throw off at once, what might, by lodging, prove noxious; agreeable to that judicious obſervation of Dr. *Fred. Hoffman*, "*Toni renalis nimia*
"*reſolutio, Morborum qui reneis occupant,*
"*potiſſima cauſa, et origo eſt.——Qua de*
"*cauſa, temperata Aſtringentia et Roborantia*
"*in Calcula tam preſervando, quam curando*
"*palmum cæteris arripiunt.*"

WHERE there is actually a ſtone lodged in the Kidneys, ureters, or bladder; theſe Waters allay heat, dilute acrimony, and waſh away freſh accretion of ſabulous matter. In an actual fit of the ſtone, a Man of ſenſe would avoid theſe, as he would all Diuretics.

In INFLAMMATIONS and ULCERS, by allaying the febrile heat, and tempering the acrimony of the Urine, they cool, cleanſe and cicatrize.

## V. GLEETS.

ANATOMICAL DISSECTIONS teach us, that obſtinate Gleets in MEN, take their riſe from the unſkilful *cure* of venereal diſorders, which corrode the *Poeſtate Glands*, and render them ſchirrous and fiſtulous. Theſe alſo take their riſe from an ignorant perſeverance in purging Medicines.

If there remains nothing of the venereal taint, Bristol Water aided by Balſamics, will ſubdue the Hectic heat, open the obſtructed Glands, waſh away the tainted Juices, conſolidate and cicatrize the Ulcers, and ſtrengthen the relaxed parts.

Where the lungs are affected by a venereal taint, or by the improper adminiſtration of Mercurials or Purgatives; where Cough, Sweatings, &c. the forerunners of a Conſumption have appeared; theſe Waters have ſtopped its career, the ſymptoms have abated, and time has been given to throw in (with prudence) ſuch anti-venereal Medicines, as have removed the infection, while the Waters have reſcued the Patient from the grave: of this fact we have daily proofs.

## VI. FLOUR ALBUS.

In Women, this diſorder, ſometimes, proceeds from an acrimonious humour infecting the Glands, and corroding the adjacent parts; as alſo from a relaxation of the orifices of the Veſſels of the Uterus or Vagina. It is ſometimes cauſed by falls, ſprains, and ſometimes by other accidents.

Many have borne up under this diſeaſe for years; ſometimes it is attended with darting pains, excoriations, and ulcers; it occaſions weakneſs, loſs of appetite, indigeſtion, ſometimes an obſtruction of the *Catameria*, and ſometimes, too great a diſcharge. It is generally attended with a fever, and an abſorption of *pus*, the one waſtes and conſumes the body, the other contaminates the Juices.

The cure muſt be adapted to the cauſe, and as this differs in different Patients, and different conſtitutions, as well as ſtages of the diſorder, it would be needleſs here to repeat, what we have ſo fully illuſtrated in other places, as well as in the laſt ſection; concerning the *modus operandi* of theſe Waters. In general, we may affirm from experiment as well as experience, that in many caſes, BRISTOL WATER will be found a ſpecific: and, in almoſt all, it will relieve, where it cannot cure.

## VII. SCURVY.

THIS diſorder is frequent among people who live on viſcid indigeſtable food, as well as among thoſe who live luxuriouſly, and uſe too little Exerciſe. It brings along with it a train of Evils too long to be enumerated in a work of this kind.

THE principal Virtue of BRISTOL WATER in this diſorder, ſeems to conſiſt in diluting, as well as waſhing away thoſe acrid ſaline particles, which corrode the Solids, and vitiate the Fluids; this it owes to its pure Element; its other ingredients open obſtructions of all ſorts, particularly of the Miliary-glands, inſenſible perſpiration is reſtored, by which thoſe Juices which by being detained in the body, acquired an acrimony, are excreted by their proper Emunctories, and a due Equilibrium is reſtored between the Solids and the Fluids.

## VIII. RHEUMATISM and GOUT.

HABITUAL GOUTS, Rheumatic and Arthritic pains, may be much relieved, if not abſolutely cured, by a proper uſe of theſe Waters, diluting the groſs, impacted humours, and reſtoring the ſecretions. They bid fair for correcting the habit, diſſolving the morbific matter, and eliminating it thoroughly out of the body.

IN thoſe Conſtitutions, in which the Gout ſeems to be interwoven with the conſtitution, where a fit of the Gout is wanted, ſo as to draw the morbific matter from the head or ſtomach, there is no Medicine equal to the BATH WATER.

## IX. COLICS.

In ſcorbutic Colics, which are owing to the acrimonious matter twitching the nervous fibres, and irritating them into painful contractions, Briſtol Waters act in the manner as deſcribed in the Scurvy.

In convulſive Colics, they have ſucceeded beyond expectation, after all other remedies had been tried in vain.

## X. FLUXES.

After what has been advanced on the virtues of the Principles contained in the Waters ſeparately, as well as in particular diſeaſes, it would be impertinent to trouble the reader with their power in a Diarrhea, this is always attended with a Fever, which the volatile *Acid*, blended with the *Fluid* bids fair to remove, as well as to dilute that acrimonious humour which twitches the inteſtines: the earth, joined to theſe, acts as a ſtrengthener.

THERE are many other complaints which they daily relieve, ſuch as HOARSENESS, WANT of APPETITE, INDIGESTION, &c.

FROM what has already been ſlightly glanced at, rather than *ſyſtematically* handled, We may fairly and rationally conclude, That as MINERAL WATERS in general, ſo BRISTOL WATERS in particular, are of ſuch Efficacy, for the *preſervation* of health, as well as the *cure* of Diſeaſes, as in the higheſt degree, to exceed all *Shop Remedies*, and that they approach the neareſt in nature to what has vainly been ſearched after, AN UNIVERSAL MEDICINE.

*FINIS.*